

Scotts Lawn Tractors
S1642, S1742, and S2046

OPERATOR'S MANUAL



***Manufactured
by John Deere***

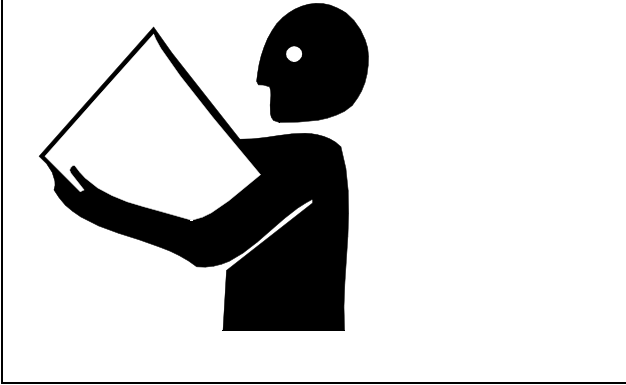


OMGX10784 C0

North American Version
Litho in U.S.A.

INTRODUCTION

THANK YOU for purchasing a **Scotts** product.



Read this manual and your attachment manual thoroughly. Failure to do so could result in personal injury or equipment damage.

This manual should be considered a permanent part of your machine and should remain with the machine when you sell it.

Product warranty is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The product warranty is explained on the warranty certificate you received from your dealer.

Measurements in this manual are metric units and their U.S. customary equivalents. RIGHT-HAND and LEFT-HAND sides are determined by facing in the direction the machine will travel when going forward. When you see a broken line arrow (----->), it indicates the part it is pointing to is hidden.

CALIFORNIA Proposition 65 Warning

⚠ Warning: The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

PRODUCT IDENTIFICATION

Record Identification Numbers

Scott's Lawn Tractors

S1642, S1742, and S2046 PIN (020001 -)

If you need to contact an Authorized Service Center for information on servicing, always provide the product model and serial number.

You will need to locate the identification number for the machine and for the engine. Record the information in the spaces provided below.

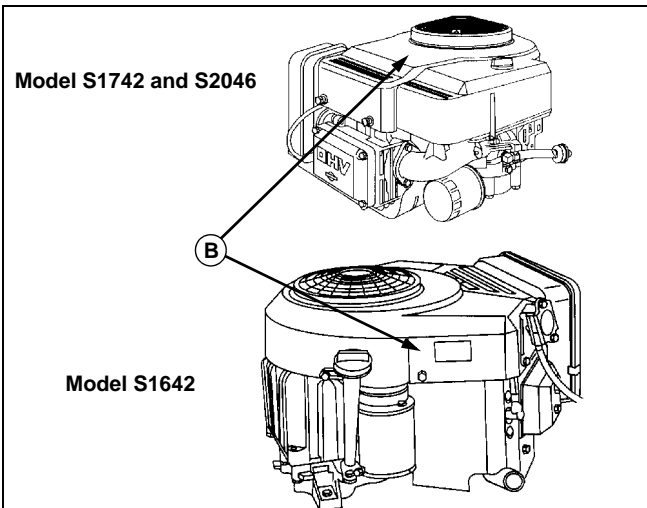
DATE OF PURCHASE:

DEALER NAME:

DEALER PHONE:



PRODUCT IDENTIFICATION NUMBER (A), (under seat):



ENGINE SERIAL NUMBER (B), (on fan shroud):

ASSEMBLY

Identify Parts

- A Operator's Manual
- B Safety Video
- C Bag of Hardware
- D Key

Bag of Hardware:

- 2 - M8x16 Bolts - Battery
- 2 - M8x16 Nuts - Battery

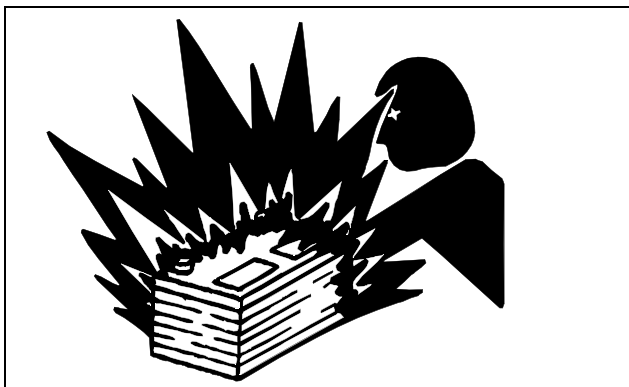
Connect and Check Battery



CAUTION: Avoid injury! Prevent Battery Explosions:

- Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.
- Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.
- Do not charge a frozen battery; it may explode. Warm battery to 16° C (60° F)

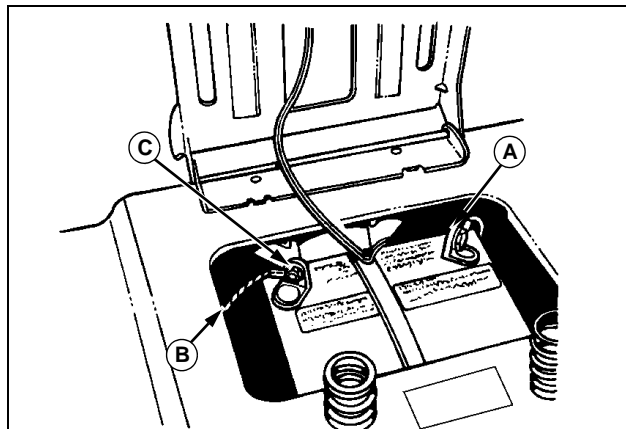
IMPORTANT: Avoid damage! This battery comes fully charged. If the mower is not used by the Service Expiration Date indicated on the battery, charge the battery. (See Charging the Battery in the Service - Electrical section.)



CAUTION: Avoid injury! DO NOT attempt to open, add fluid or service battery. Any attempt to do so will void warranty and lead to possible injury.

NOTE: Do not remove the BLACK negative (-) protective cap at this time.

1. Remove and discard the RED positive (+) protective cap from the positive (+) battery terminal.



2. Connect RED positive (+) cable (A) to battery with 6mm hex head bolt and 6 mm flange nut. Tighten securely. Apply petroleum jelly or silicone spray to terminal to prevent corrosion. Install the red terminal cover.
3. Remove and discard the BLACK (-) protective cap from the negative battery terminal.
4. Connect silver braided grounding cable (B) to the negative (-) terminal (C) with remaining 6 mm hex head bolt and 6 mm flange nut and tighten securely. Apply petroleum jelly or silicone spray to terminal to prevent corrosion.

42-Inch Mowers Only



CAUTION: Avoid injury! Never operate the mower without the discharge chute guard in place.

- If tractor/mower deck is being set-up for mulching, install mulch cover kit. (See Using Mower Deck Mulch Ready in the Operating Mower section.)
- If tractor/mower deck is being set-up for side discharger or 2-bag bagger DO NOT install mulch cover kit. (See Using Mower Deck Side Discharge OR Using Mower Deck with Optional Equipment in the Operating Mower section.)

ASSEMBLY

Checking Tire Pressure



CAUTION: Avoid injury! Explosive separation of a tire and rim parts can cause serious injury or death:

- Do not attempt to mount a tire without the proper equipment and experience to perform the job.
- Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.
- When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly.
- Check tires for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

1. Check tires for damage.
2. Check tire pressure with an accurate gauge.
3. Add or remove air, if necessary:

Tire Size	Pressure-kPa (psi)
Front: 15-Inch	97 kPa (14 psi)
Rear: 20-Inch	69 kPa (10 psi)

SAFETY SIGNS

Safety-Alert Symbol



Read and recognize safety information. Be alert to the potential for personal injury when you see this safety-alert symbol.

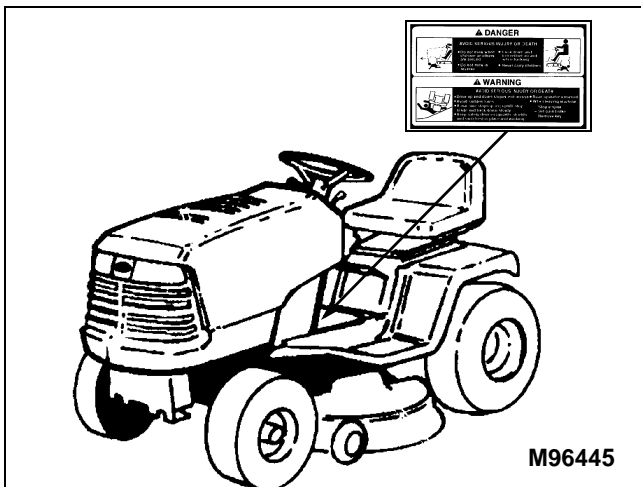
On your machine safety labels, the words DANGER, WARNING, and CAUTION are used with this safety-alert symbol. DANGER identifies the most serious hazards.

In this manual, the word CAUTION and this symbol call attention to safety messages.

Machine Safety Labels

DANGER

AVOID SERIOUS INJURY OR DEATH



- Do not mow when children or others are around
- Do not mow in reverse
- Look down and behind before and while backing
- Never carry children even with blades off

WARNING

AVOID SERIOUS INJURY OR DEATH

- Drive up and down slopes, not across

- Avoid sudden turns
- If machine stops going uphill, stop blade and back down slowly
- Keep safety devices (guards, shields, and switches) in place and working
- Read operator's manual
- When leaving machine:
 - Stop engine
 - Set park brake
 - Remove key

DANGER/POISON

SHIELD EYES.

EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.

NO

- SPARKS
- FLAMES
- SMOKING

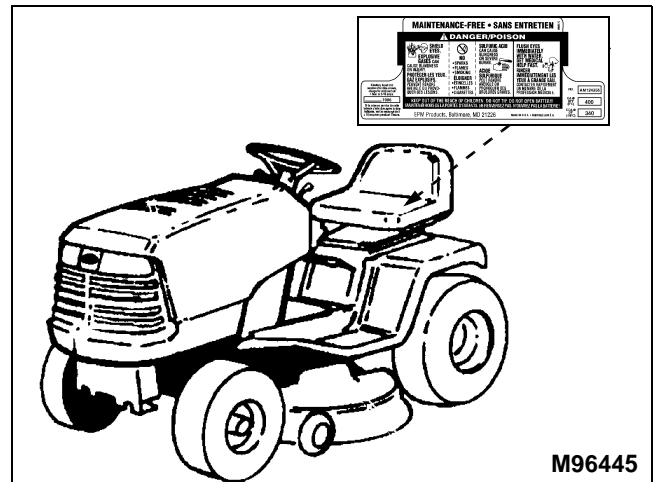
SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS

FLUSH EYES IMMEDIATELY WITH WATER.

GET MEDICAL HELP FAST.

MAINTENANCE-FREE

KEEP OUT OF THE REACH OF CHILDREN. DO NOT TIP. DO NOT OPEN BATTERY!



Picture Note: Located on Battery under seat

DANGER

ROTATING BLADE

DO NOT PUT HANDS OR FEET UNDER OR INTO

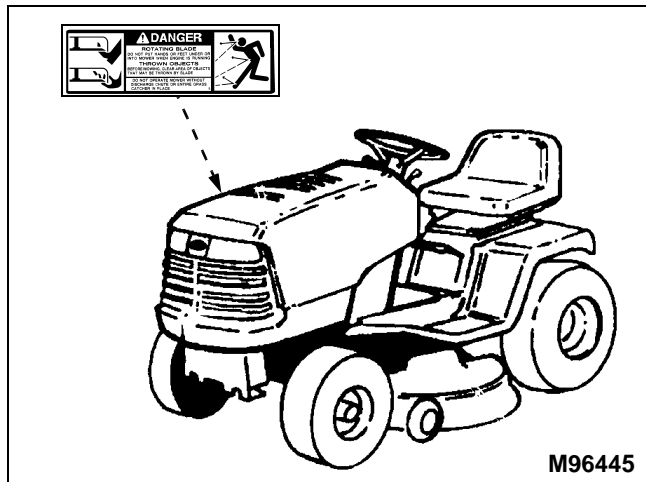
SAFETY SIGNS

MOWER WHEN ENGINE IS RUNNING

THROWN OBJECTS

BEFORE MOWING, CLEAR AREA OF OBJECTS THAT MAY BE THROWN BY BLADE

DO NOT OPERATE MOWER WITHOUT DISCHARGE CHUTE OR ENTIRE GRASS CATCHER IN PLACE

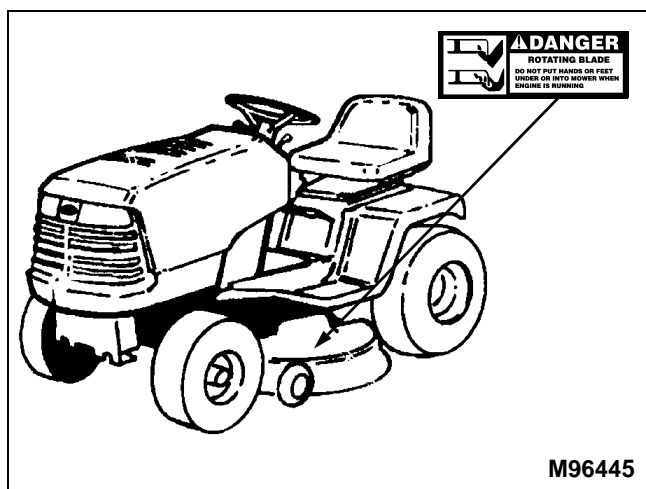


Picture Note: Located on Right-Hand side of deck

DANGER

ROTATING BLADE

DO NOT PUT HANDS OR FEET UNDER OR INTO MOWER WHEN ENGINE IS RUNNING



Picture Note: Located on Left-Hand side of deck

authorized service centers. Contact your John Deere Commercial and Consumer Equipment Retailer concerning emission controls and component questions.

The presence of an emissions label signifies that the engine has been certified with the United States Environmental Protection Agency (EPA) and/or California Air Resources Board (CARB).

The emissions warranty applies only to those engines marketed by John Deere that have been certified by the EPA and/or CARB; and used in the United States and Canada in off-road mobile equipment.

Emission Compliance Period

If your engine has the emission compliance category listed on the emission control system certification or air index label, this indicates the number of operating hours for which the engine has been certified to meet EPA and/or CARB emission requirements. The following table provides the engine compliance period in hours associated with the category found on the certification label.

Agency	Category	Hours
EPA	C	250
EPA	B	500
EPA	A	1000
CARB	Moderate	125
CARB	Intermediate	250
CARB	Extended	500

Certification

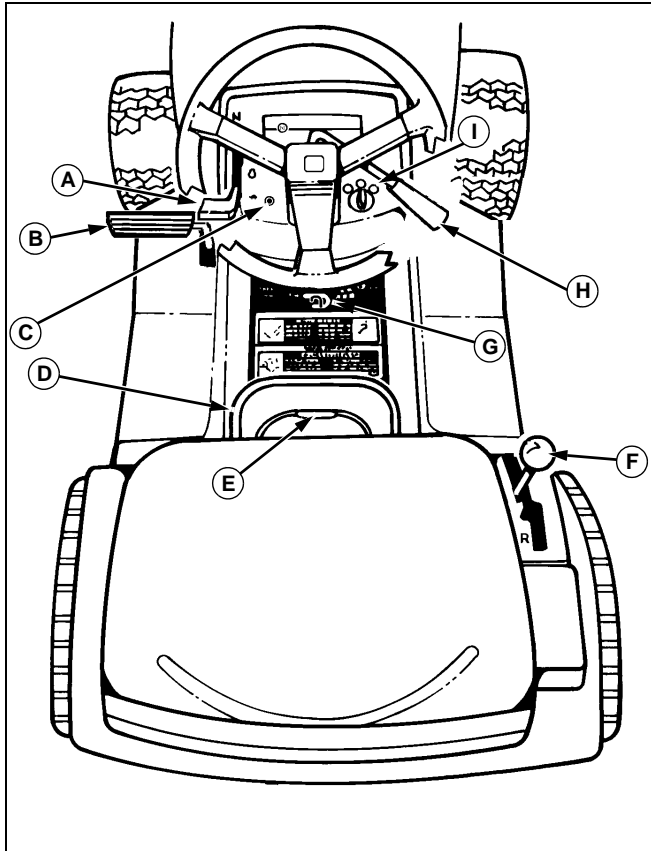
Your mower has been certified by an independent laboratory for compliance with American National Standard B-71.1, "Safety Specifications" for Power Lawn Mowers, Lawn and Garden Tractors, and Lawn Tractors.

Emission Control System Certification Label

NOTE: Tampering with emission controls and components by unauthorized personnel may result in severe fines or penalties. Emission controls and components can only be adjusted by EPA and/or CARB

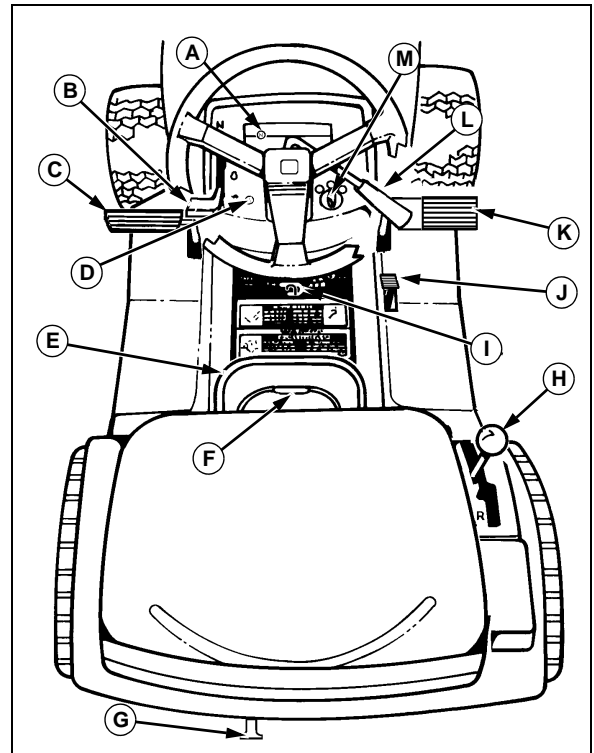
CONTROLS

Tractor Controls - Gear



- A - Throttle/Choke Control
- B - Foot Pedal - Brake/Clutch
- C - Reverse Implement Option Switch
- D - Attachment Lift Lever
- E - Locking Lever
- F - Transmission Shift Lever
- G - Park Brake
- H - PTO Drive Lever
- I - Ignition Switch

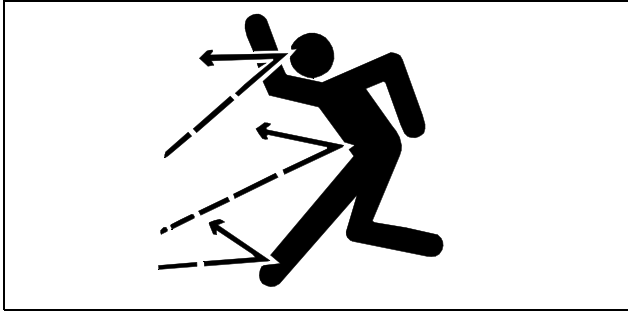
Tractor Controls - Automatic



- A - Choke Knob (S2046)
- B - Throttle/Choke Control (S1642 and S1742)
Throttle Control (S2046)
- C - Foot Pedal - Brake/Clutch/Return to Neutral
- D - Reverse Implement Option Switch
- E - Attachment Lift Lever
- F - Locking Lever
- G - Free Wheeling Knob
- H - Transmission Shift Lever (Hand Control Units
Only) Cruise Control Lever (Foot Control Units
Only)
- I - Park Brake
- J - Foot Pedal, Reverse (Foot Control Units Only)
- K - Foot Pedal, Forward (Foot Control Units Only)
- L - PTO Drive Lever
- M - Ignition Switch

OPERATING MACHINE

Operate Safely



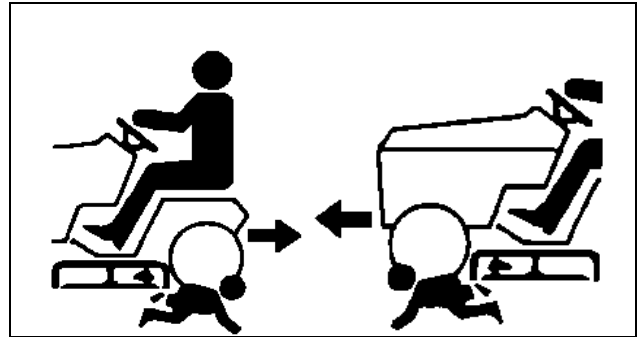
- In addition to reading your Operator's Manual, view your Mowing Safety Video.
- Check brake action before you operate. Adjust or service brakes as necessary.
- Inspect machine before you operate. Be sure hardware is tight. Repair or replace damaged, badly worn, or missing parts. Be sure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
- Clear work area of objects that might be thrown. Keep people and pets out of the work area. Stop machine if anyone enters the area.
- If you hit an object, stop the machine and inspect it. Make repairs before you operate. Keep machine and attachments properly maintained and in good working order.
- DO NOT leave machine unattended when it is running.
- Only operate during daylight or with good artificial light.
- Be careful of traffic when operating near or crossing roadways.
- Do not wear radio or music headphones while operating the machine. Safe operation requires your full attention.
- Older adults are involved in a large percentage of riding mower accidents involving injury. These operators should evaluate their ability to operate a mower safely enough to protect the operator and others from serious injury.

Park Safely

- Stop machine on a level surface, not on a slope.
- Disengage mower blades.
- Lower attachments to the ground.
- Engage park brake.
- STOP engine.
- Remove key.
- Before you leave the operator's seat, wait for engine and all moving parts to STOP.

Rotating Blades are Dangerous - Protect Children and Prevent Accidents

PROTECT CHILDREN:



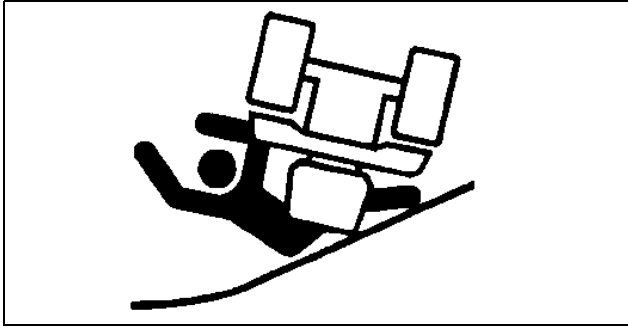
- Never assume that children will remain where you last saw them. Children are attracted to mowing activity, stay alert to the presence of children.
- Keep children in the house when you are operating the machine.
- Turn machine off if a child enters the mowing area.
- Use extra care when you come to blind corners, shrubs, trees, or other objects that may block your vision.
- DO NOT let children or an untrained person operate the machine.
- DO NOT carry or let children ride on machine or any attachment even with the blades off. DO NOT tow children in a cart or trailer.

HELP PREVENT SERIOUS OR FATAL ACCIDENTS:

- Be alert at all times, drive forward carefully. People especially children can move quickly into the mowing area before you know it.
- Back carefully. Disengage mower blades and look behind the machine carefully, especially for children, before you back up.
- DO NOT mow in reverse unless it is absolutely necessary.
- Disengage mower blades when you are not mowing.
- DO NOT operate machine if you are under the influence of drugs or alcohol.

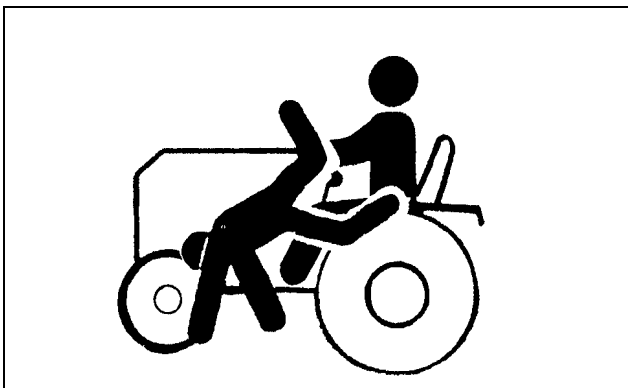
OPERATING MACHINE

Avoid Tipping



- DO NOT drive where machine could slip or tip.
- Stay alert for holes and other hidden hazards in the terrain.
- Keep away from drop-offs.
- Slow down before you make a sharp turn or operate on a slope.
- When pulling loads or using heavy equipment, use only approved hitches, limit loads to those you can safely control, and use counterweights or wheel weights when required per this manual or your attachment manual.
- Drive up and down a hill—not across. Be careful when you change direction on a slope.
- DO NOT stop when going up hill or down hill. If machine stops going up hill, DISENGAGE mower blades and back down slowly.
- DO NOT mow wet grass. Reduced traction could cause sliding.
- DO NOT try to stabilize the machine by putting your foot on the ground.

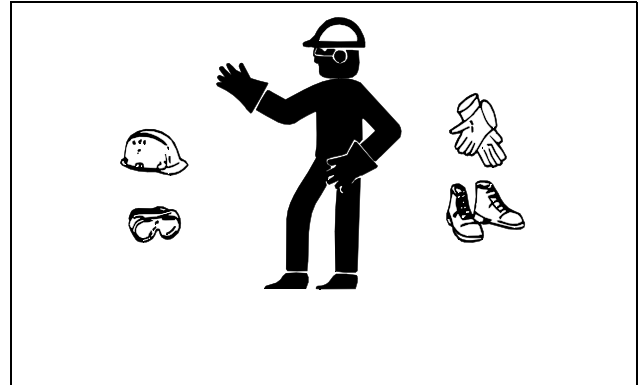
Keep Riders Off



- Only allow the operator on the machine. Keep riders off.
- Riders on the machine or attachment may be struck by foreign objects or thrown off the machine causing serious injury.

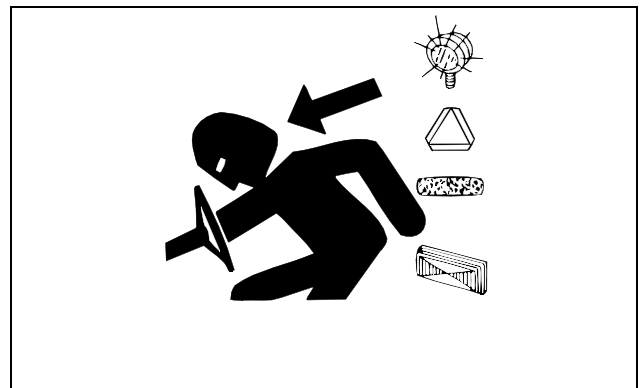
- Riders obstruct the operator's view resulting in the machine being operated in an unsafe manner.

Wear Appropriate Clothing



- Wear close fitting clothing and safety equipment appropriate for the job.
- Loud noise can cause impairment or loss of hearing, wear a suitable protective device such as earplugs.

Transport Safely

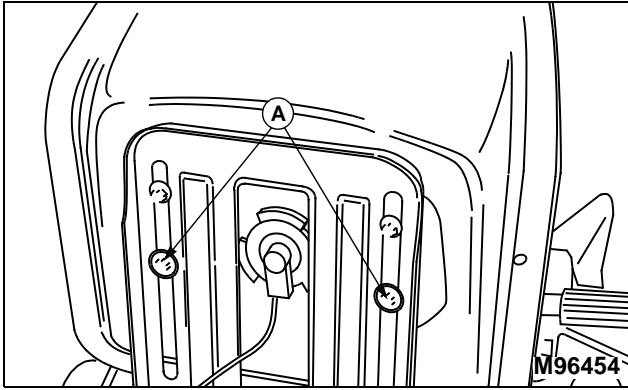


- Use safety lights and devices. Slow moving machines when driven on public roads are hard to see, especially at night. Avoid personal injury or death resulting from a collision with a vehicle.
- Whenever driving on public roads, use flashing warning lights and turn signals according to local regulations. Extra flashing warning lights may need to be installed.

Adjusting Seat

1. Pivot seat forward on its mounting bracket.

OPERATING MACHINE

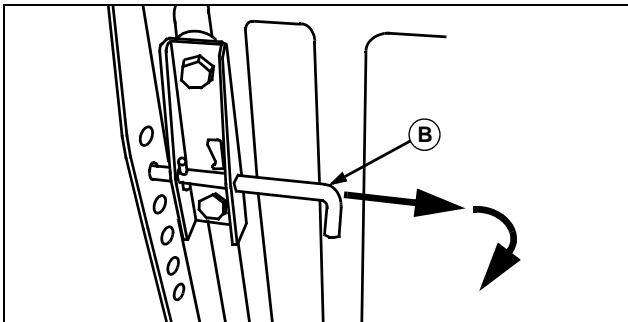


Picture Note: Model with capscrew adjuster used for illustration.

2. Loosen two cap screws (A) two turns.
3. Slide forward or rearward on mounting bracket to desired position.
4. Tighten cap screws or knobs.
5. Lower seat.

Using Slide Adjuster (S2046)

1. Pivot seat forward on its mounting bracket.



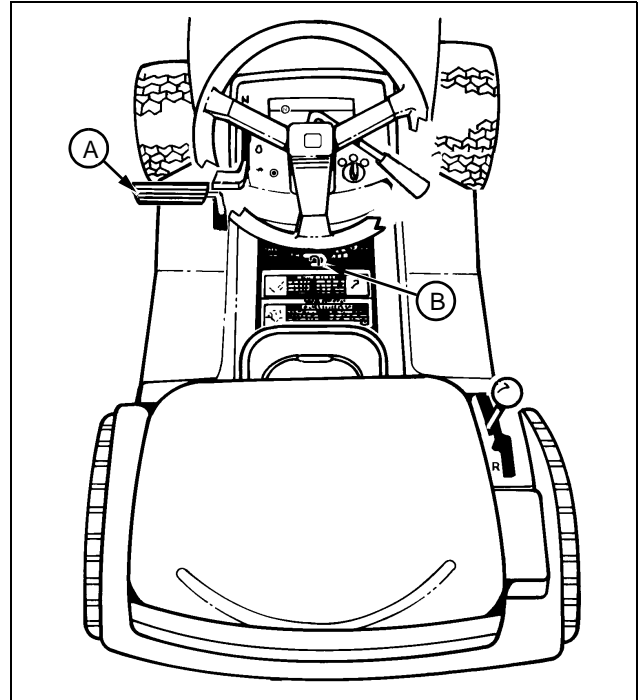
2. Pull pin (B) and rotate pin to the locked position.
3. Slide seat forward or rearward to desired position.
4. Release pin, make sure pin engages in hole in frame.

Using the Park Brake



CAUTION: Avoid injury! Always **LOCK** park brake before getting off tractor or leaving tractor unattended.

LOCKING PARK BRAKE:



1. Push and hold foot pedal (A) all the way down.
2. Move park brake lever (B) forward, then to the left to lock position.
3. Remove foot from pedal. Pedal should not return to the up position.

UNLOCKING PARK BRAKE

1. Push and hold foot pedal (A) all the way down.
2. Move park brake lever (B) to the right, then to the rear.
3. Remove foot from pedal. Pedal should return to the up position.

Starting Engine



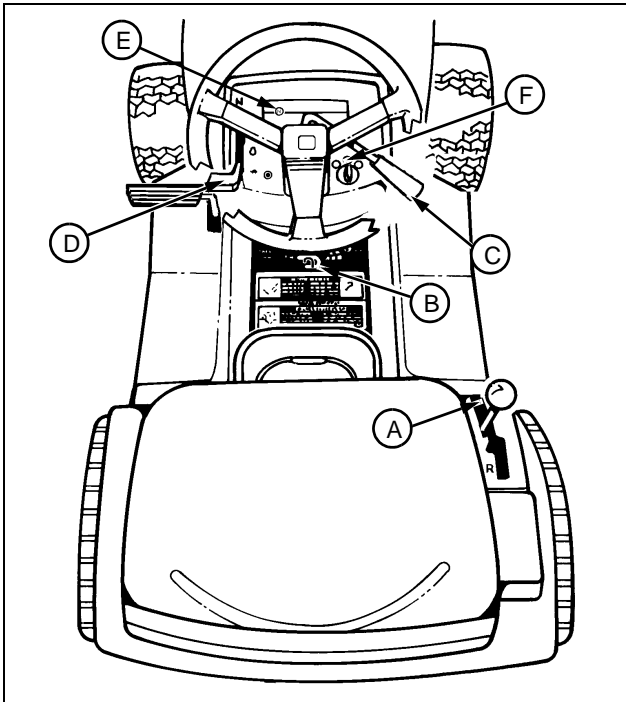
CAUTION: Avoid injury! Start engine **ONLY** outdoors or in a well ventilated place. Exhaust fumes are dangerous.



IMPORTANT: Avoid damage! Do not operate starter more than 20 seconds at a time, or you may damage it. If engine does not start: Wait two minutes before you try again. See Troubleshooting section.

NOTE: Engine will not start unless: PTO lever is **DISENGAGED**, park brake is **LOCKED** or brake/clutch pedal is pushed down. On **GEAR** model: The transmission shift lever should be in **N (NEUTRAL)** position.

OPERATING MACHINE



1. **Gear units** - Move transmission shift lever (A) to N (NEUTRAL) position.

Automatic units - If equipped with shift lever, move shift lever to N (NEUTRAL) position. If equipped with foot pedal controls, do not depress either pedal.

2. Lock the park brake (B).

3. Pull PTO lever (C) all the way back to the rearward (OFF) position.

4. To start the engine:

- S1642 and S1742 - Place the throttle lever (D) in the CHOKE (N) position. As the engine begins to run smoothly, lower the throttle lever in small steps, allowing the engine to accept changes in speed and load, until the throttle lever is in the FAST (F) position.

- S2046 - Place the throttle lever (D) the FAST (F) position and pull out choke knob (E). As the engine begins to run smoothly, push the choke knob in until fully seated.

5. Turn ignition key (F) to start position to crank the engine. Crank engine until it starts, but no longer than 5 seconds.

6. If engine starts, release key to run position. If engine does not start, release key to run position and wait 10 seconds before cranking the engine again.

7. Let engine run for a couple of minutes to warm-up before operating tractor.

Using Throttle Control

Always operate the engine at FULL (F) THROTTLE.

Operating the engine at less than full throttle reduces the battery charging rate and reduces fan cooling efficiency of the engine.

Full throttle offers the best bagging and mower performance.

Cold Weather Starting Tips

Always use fresh winter grade fuel.

Do not crank engine for more than 30 seconds in any single attempt.

During first minute of operation engine may be operated in partial choke to allow smoother running. As engine warms slowly reduce engine speed to the full throttle detent position.

On Automatic Transmission

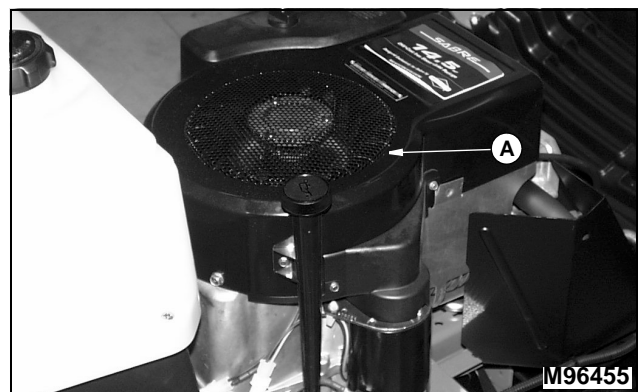
Allow engine to run for a few minutes before using tractor to allow automatic transmission oil to warm. Sluggish transmission response in cold weather indicates that oil has not warmed to allow optimum performance.

Warming and Idling Engine

WARMING ENGINE:

- Run Engine at half speed for 2–3 minutes.

IDLING ENGINE:

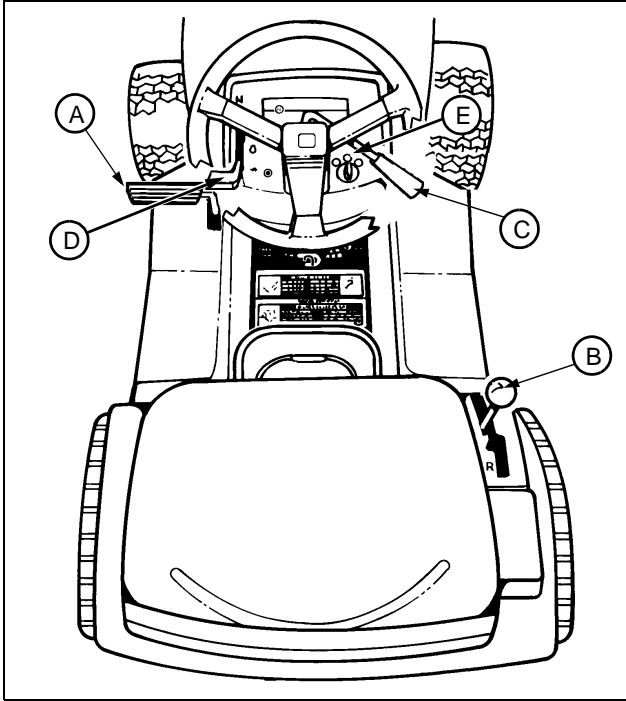


- Engine is air-cooled and needs a large volume of air to keep cool. Keep air intake screen (A) on top of engine clean.

- Avoid unnecessary engine idling.

OPERATING MACHINE

Stopping Engine



1. Push down on foot pedal (A).
2. **Gear units** - Move transmission shift lever (B) to N (NEUTRAL) position.

Automatic units - If equipped with shift lever, move shift lever to N (NEUTRAL) position. If equipped with foot pedal controls, release either pedal and unit will automatically return to neutral. If cruise control is engaged, move lever to OFF position.

3. Pull PTO lever (C) all the way back to the rearward (OFF) position.
4. Move throttle lever (D) to SLOW (t) position. Let engine run at low throttle a few seconds.
5. Turn key (E) to OFF position.
6. Remove key.
7. LOCK the park brake.

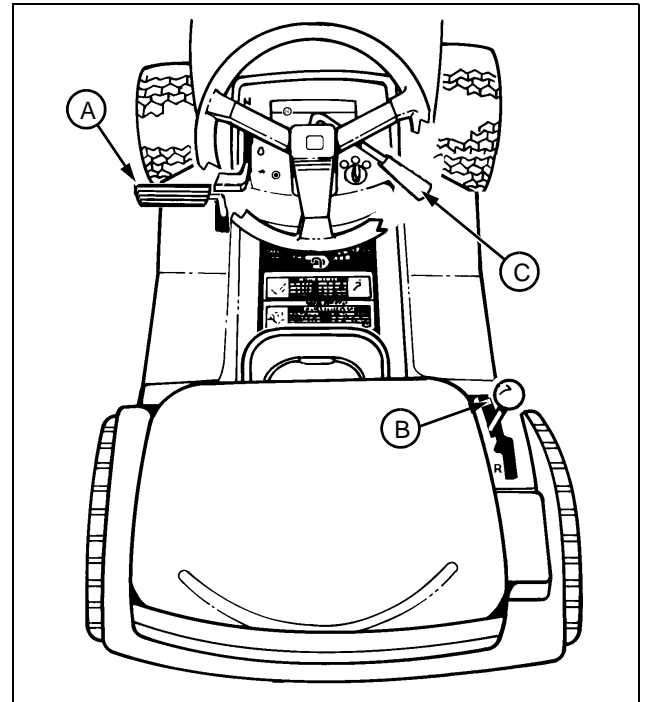
Using Travel Controls - Gear



CAUTION: Avoid injury!

- Before moving forward or rearward, make sure area is clear of bystanders, especially children.
- Disengage mower or attachment before backing up.

TO TRAVEL FORWARD:



1. Push foot pedal (A) all the way forward to the BRAKE position.
2. Move shift lever (B) to the right and forward to desired FORWARD position.
3. Slowly release foot pedal to engage machine drive.

TO TRAVEL IN REVERSE:

NOTE: The engine and mower will stop as the shift lever is moved to the R (REVERSE) position with mower engaged.

1. Push foot pedal (A) all the way down to STOP tractor.
2. Pull PTO lever (C) all the way back to the rearward (OFF) position.
3. Look behind the vehicle to be sure there are no bystanders nearby.
4. Move shift lever (B) to the right and rearward to the R (REVERSE) position.
5. Release foot pedal slowly.

FOR EMERGENCY STOPPING:

1. Push foot pedal (A) fully to stop machine.

Using Travel Controls - Automatic

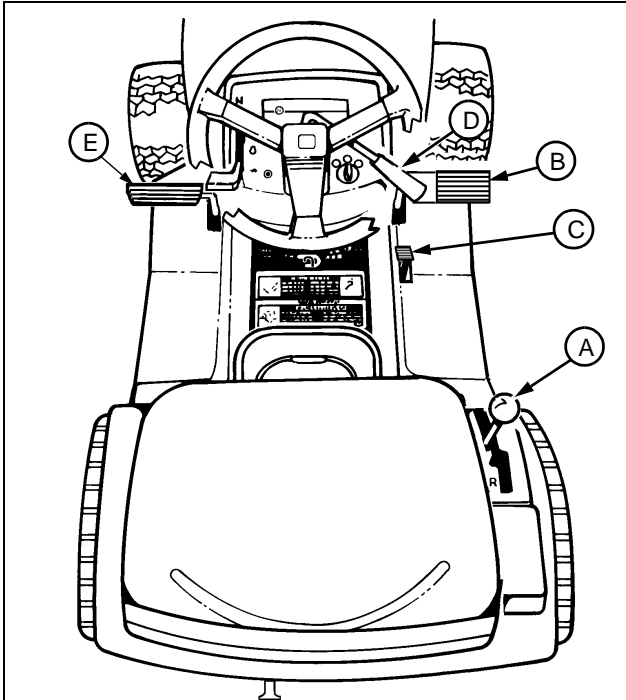
OPERATING MACHINE



CAUTION: Avoid injury!

- Before moving forward or rearward, make sure area is clear of bystanders, especially children.
- Disengage mower or attachment before backing up.

To Travel Forward:



1. **Units with Shift Lever (A)** - Move transmission shift lever (A) to the right and forward. The speed of the tractor is determined by how far forward the shift lever is moved.

Units with Foot Controls (B) - Depress forward pedal (B). The speed of the tractor is determined by how far down the pedal is pressed.

TO TRAVEL IN REVERSE:

IMPORTANT: Avoid damage! To prevent transmission damage, stop tractor movement before changing direction of travel.

When cruise control is not in use, hand lever should be returned manually, all the way rearward to OFF position. Otherwise, hand lever will restrict travel of reverse pedal linkage and reverse speed of tractor will be too slow.

NOTE: The engine and mower will stop as the drive lever is moved to the R (REVERSE) position with mower engaged.

1. **Units with Shift Lever (A)** - Move transmission shift lever (A) rearward into the R (REVERSE) position. The speed of the tractor is determined by how far forward the shift lever is moved.

Units with Foot Controls (C) - Depress reverse pedal (C). The speed of the tractor is determined by how far down the pedal is pressed.

2. Pull PTO lever (C) all the way back to the rearward (OFF) position.

3. Look behind the vehicle to be sure there are no bystanders nearby.

FOR EMERGENCY STOPPING:

1. **Units with Shift Lever (A)** - Push down on foot pedal (E). Transmission shift lever (A) will automatically return to NEUTRAL position and brakes will be applied.

Units with Foot Controls (C) - If cruise control is engaged, move lever to OFF position. Release either pedal (B or C) and unit will automatically return to neutral and STOP. Push down on brake/clutch pedal (E). Brakes will be applied to assist in stopping.

Using Cruise Control



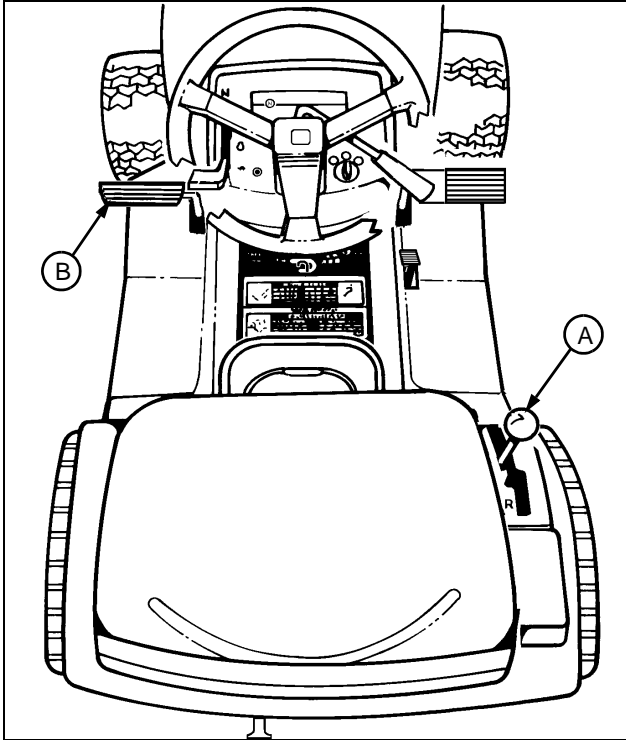
CAUTION: Avoid injury! DO NOT use cruise control when going down hills. Tractor speed will increase. Operate tractor in a large, open area to learn how the cruise control works

IMPORTANT: Avoid damage! When cruise control is not in use, hand lever should be returned manually, all the way rearward to OFF position. Otherwise, hand lever will restrict travel of reverse pedal linkage and reverse speed of tractor will be too slow.

Use cruise control when you want to maintain travel speed without having to hold the forward travel pedal down. Cruise control operates only for forward travel.

OPERATING MACHINE

ENGAGE CRUISE CONTROL:



1. Start with the cruise control lever (A) in the OFF position.
2. Move cruise control lever forward, at the "☂" position the tractor will begin to move forward.
3. Continue to move cruise control lever forward toward the "☁" position and the tractor will increase in speed.
4. Move cruise control lever to the desired speed and release lever.

DISENGAGE CRUISE CONTROL:

NOTE: *Depressing brake/clutch pedal (B) will return cruise control lever to the OFF position.*

1. Move the cruise control lever to the OFF position.

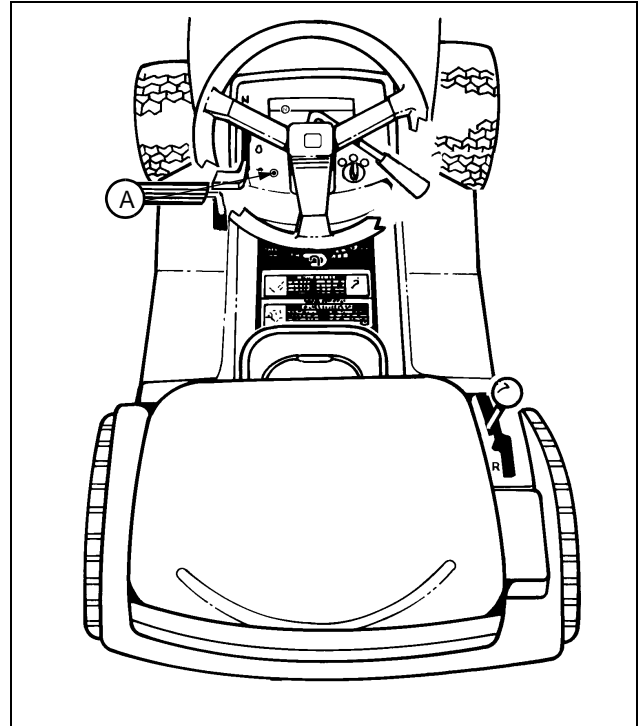
Using Reverse Implement Option



CAUTION: Avoid injury! Before moving forward or rearward, make sure area is clear of bystanders, especially children.

NOTE: *Operating the mower while backing up is strongly discouraged. The Reverse Implement Option should be used ONLY when operating another attachment or when the operator deems it necessary to reposition the machine with the mower engaged.*

1. Stop the machine FORWARD travel with mower engaged. On foot control models, be sure cruise control lever is all the way rearward in the OFF position.
2. Look behind the vehicle to be sure there are no bystanders.



3. Push and hold in the reverse implement switch (A) while:
 - Automatic - move drive lever to the rear or press reverse pedal.
 - Gear - move the gear shift lever to the R (REVERSE) position.

NOTE: *If the engine and mower stop while repositioning the machine, return mower engagement lever to the OFF position and restart the machine. (See Starting The Engine in this section.) Begin again with Step 2.*

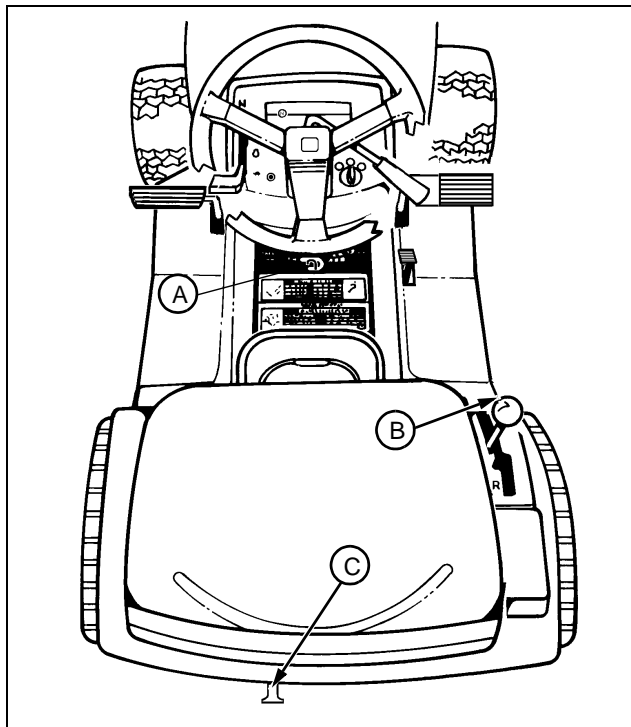
4. As the machine begins to move rearward, release the reverse implement switch and reposition the machine.
5. Resume FORWARD travel. The mower should continue operating.
6. Repeat Steps 1 through 5 to reposition the machine again.

OPERATING MACHINE

Pushing Machine

IMPORTANT: Avoid damage! Avoid transmission damage, DO NOT tow machine.

To move machine when engine is STOPPED:



- Unlock the park brake (A).
- GEAR MODEL: Put transmission shift lever (B) in N (Neutral).
- AUTOMATIC MODEL: Pull out on free-wheeling lever (C).
- Push machine to desired location.

NOTE: AUTOMATIC MODEL: Push free-wheeling lever (C) IN before operating tractor.

Daily Operating Checklist

- Test safety systems.
- Check tire pressure.
- Check fuel level.
- Check engine oil level.
- Remove grass and debris from machine.

Testing Safety Systems



CAUTION: Avoid injury! Engine exhaust fumes can cause sickness or death.

If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

Use the following checkout procedure to check for normal operation of machine.

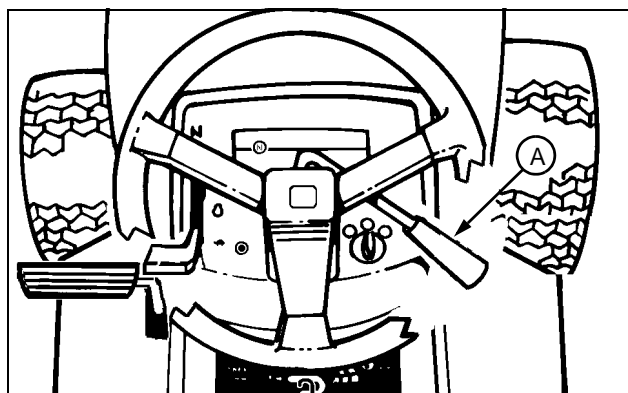
If there is a malfunction during one of these procedures, DO NOT operate machine. (See your Authorized Service Center for service.)

Perform these tests in a clear open area. Keep bystanders away.

NOTE: Your Lawn Tractor is equipped with a ELECTRONIC SAFETY INTERLOCK. Engine will not start unless: PTO lever is DISENGAGED. Brake pedal is depressed OR parking brake is set.

Test 1

1. Operator on seat.
2. Unlock the park brake.

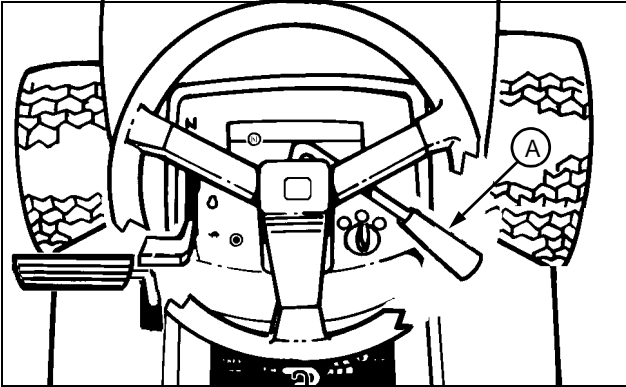


3. Pull PTO lever (A) back to DISENGAGE.
4. Try to start engine.
5. Engine MUST NOT start. If engine starts, there is a problem with your safety interlock circuit. (See your Authorized Service Center.)

OPERATING MACHINE

Test 2

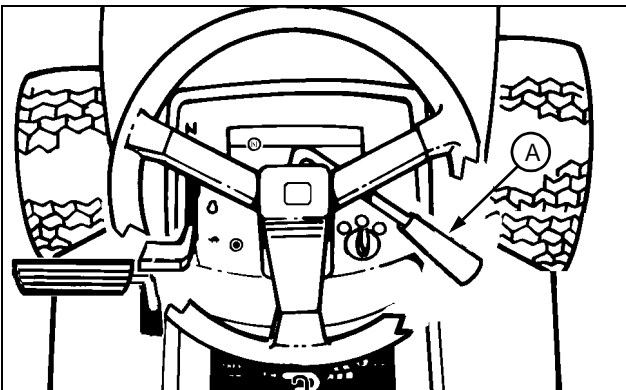
1. Operator on seat.
2. Lock the park brake.



3. Push PTO lever (A) forward to ENGAGE.
4. Try to start engine.
5. Engine MUST NOT start. If engine starts, there is a problem with your safety interlock circuit. (See your Authorized Service Center.)

Test 3

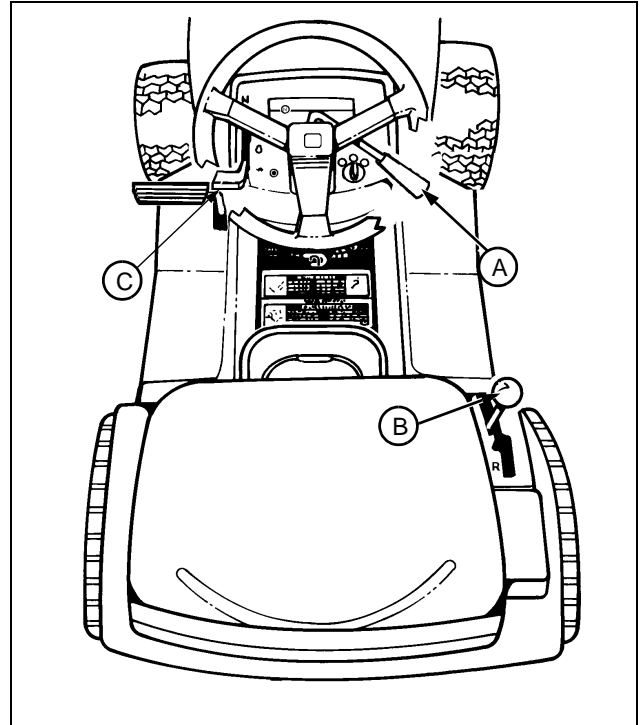
1. Operator on seat.
2. Lock the park brake.



3. Pull PTO lever (A) back to DISENGAGE.
4. Start engine and move throttle lever (B) to HALF-SPEED (⊙) position.
5. Push PTO lever (A) forward to ENGAGE.
6. Move throttle lever to FAST (⚡) speed position.
7. Raise up off of seat. DO NOT get off tractor.
8. Engine will begin to stop. If engine does not begin to stop, there is a problem with your safety interlock circuit. (See your Authorized Service Center.)

Test 4

1. Operator on seat.
2. Push brake pedal down.

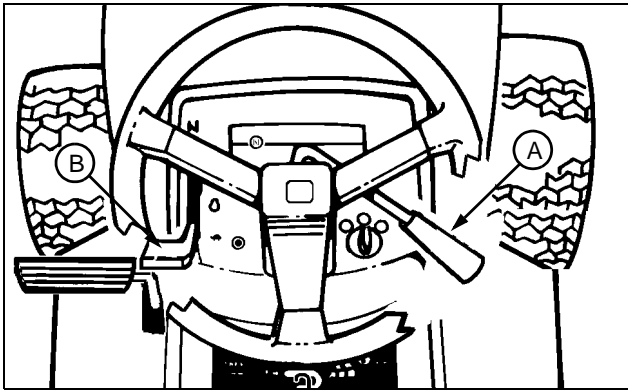


3. Pull PTO lever (A) back to DISENGAGE.
4. Put transmission shift lever (B) in N (NEUTRAL) position.
5. Start engine and move throttle lever (C) to FAST (⚡) speed position.
6. Release brake slowly.
7. Raise up off of seat. DO NOT get off tractor.
8. Engine will begin to stop. If engine does not begin to stop, there is a problem with your safety interlock circuit. (See your Authorized Service Center.)

Test 5

1. Operator on seat.
2. Lock the park brake.

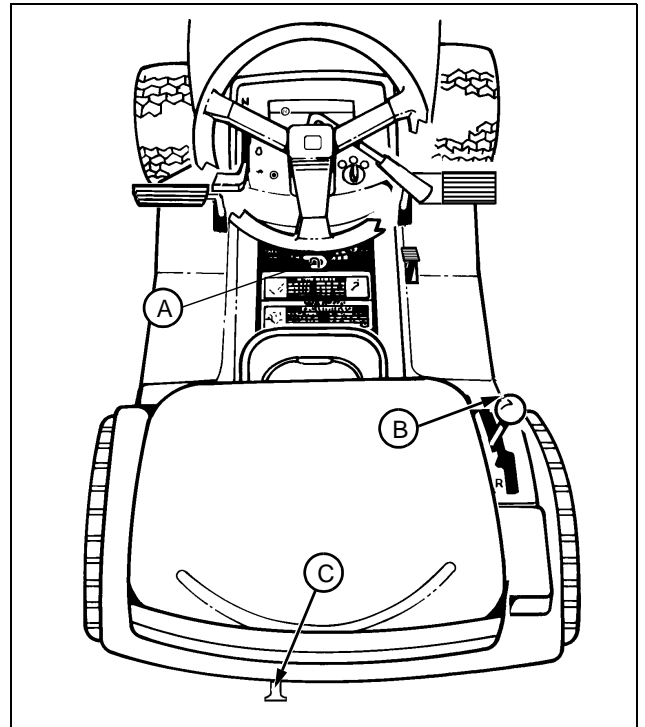
OPERATING MACHINE



3. Pull PTO lever (A) back to DISENGAGE.
4. Start engine and move throttle lever (B) to FAST (🐎) speed position.
5. Raise up off of seat. DO NOT get off tractor.
6. Engine MUST remain running. If engine does stop, there is a problem with your safety interlock circuit. (See your Authorized Service Center.)

Test 6

IMPORTANT: Avoid damage! On Automatic Transmission Models: Do Not operate tractor or start engine with the free-wheeling lever (C) out or transmission damage may occur.



1. Lock the park brake (A).
2. On Gear Models: Put transmission shift lever (B) in N (Neutral).
On Automatic Models: Pull out free-wheeling lever (C) to unlock.
3. Try to push machine manually.
4. Park brake MUST prevent machine from moving. If machine moves, parking brake needs to be adjusted. (See your Authorized Service Center.)
5. On Automatic Models: Push free-wheeling lever back in.

Test 7

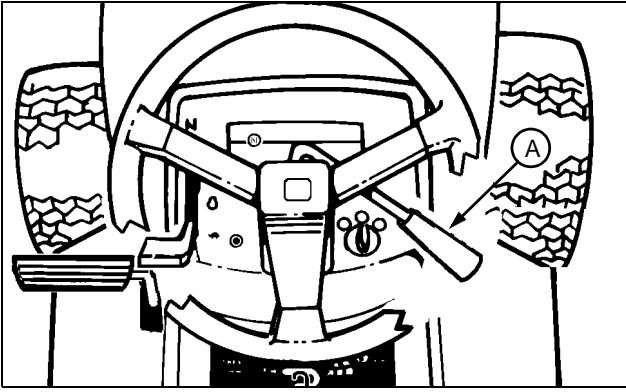


CAUTION: Avoid injury! Before moving rearward, make sure area is clear of bystanders, especially children.

Test Reverse Implement Option:

1. Start engine.

OPERATING MACHINE



2. Push PTO lever (A) forward to ENGAGE.
3. Look behind the vehicle to be sure there are no bystanders.
4. Begin REVERSE travel by moving the drive lever or reverse pedal for Automatic Model or gear shift lever for Gear Model to R (REVERSE) position.

Mower and engine should stop operation. If mower or engine continues to operate as tractor begins travel in REVERSE, do not continue to operate mower. (See your Authorized Service Center for service.)

Avoid Damage to Plastic and Painted Surfaces

- DO NOT wipe plastic parts unless rinsed first. (See Correct Cleaning Care in Service-Miscellaneous section.)
- Insect repellent spray may damage plastic and painted surfaces. Do not spray insect repellent near machine.
- Be careful not to spill fuel on machine. Fuel may damage surface. Wipe up spilled fuel immediately.

Avoid Using Ground Engaging Equipment

IMPORTANT: Avoid damage! This tractor is NOT intended for use with ground engaging equipment. Use of such equipment could result in damage to transmission components.

This tractor is not intended for use with ground engaging equipment such as a rear tiller, disk, blade or plow.

Using Front Weights

CAUTION: Avoid injury! Tractor front wheel weights improve stability in most slope operation. To avoid injury, add front wheel weights for better front-end stability and steering when using a rear mounted attachment.

Install front wheel weights, two required, for better stability and steering control when you use equipment such as the rear-mounted grass bagger or dumpcart.

See your Authorized Service Center for Front Weights.

Remove front wheel weights when not required.

Using Rear Wheel Weights

Use of rear wheel weights is recommended for improved traction when an attachment, such as snowthrower or blade is used.

See your Authorized Service Center for Rear Weights.

Using Tire Chains

Tire chains are recommended for use with snowthrower and, under certain conditions, the front blade.

See your Authorized Service Center for Tire Chains.

Transporting

Do not tow machine.

Use a heavy-duty trailer to transport your machine.

Raise mower deck to highest position when transporting to trailer.

Disengage PTO.

Drive forward onto trailer.

Lower mower or any attachment to trailer deck.

LOCK park brake.

Be sure trailer has all the necessary lights and signs required by law.

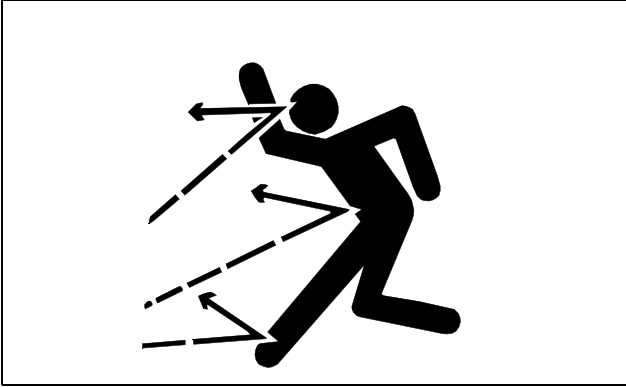
Fasten machine to trailer with heavy-duty straps, chains, or cables. Both front and rear straps must be directed down and outward from tractor.

OPERATING MOWER

Operate Mower Safely

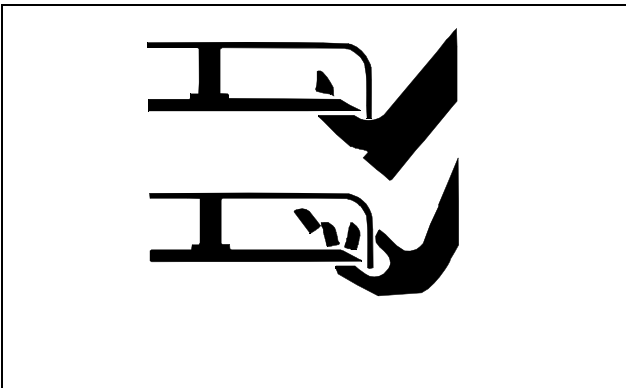
- In addition to reading your Operator's Manual, view your Mowing Safety Video.

Check Ground Conditions



- Clear mowing area of objects that might be thrown. Keep people and pets out of mowing area.
- Study mowing area. Set up safe mowing pattern. Do not mow under conditions where traction or stability is doubtful.
- First, test drive area with PTO lever DISENGAGED and mower lowered. Slow down when you travel over rough ground.

Avoid Injury From Contacting Blades



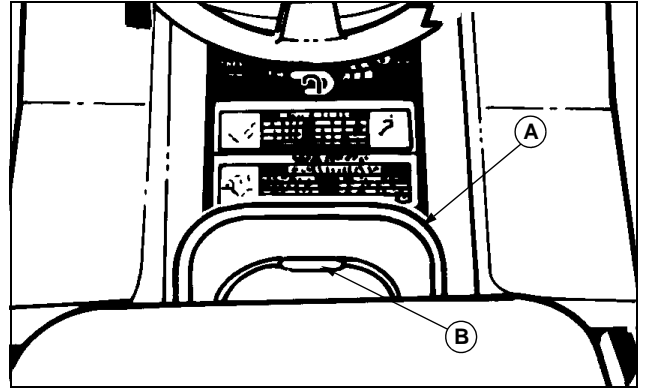
Before you dismount to unplug or adjust mower:

- DISENGAGE PTO lever to stop mower blades.
- STOP the engine.
- LOCK the park brake.
- Remove key.
- Wait for mower blades to STOP.
- Keep hands, feet and clothing away from mower deck

when engine is running.

- DISENGAGE PTO lever to stop mower blades when you are not using mower.

Using Lift Lever to Raise and Lower Mower



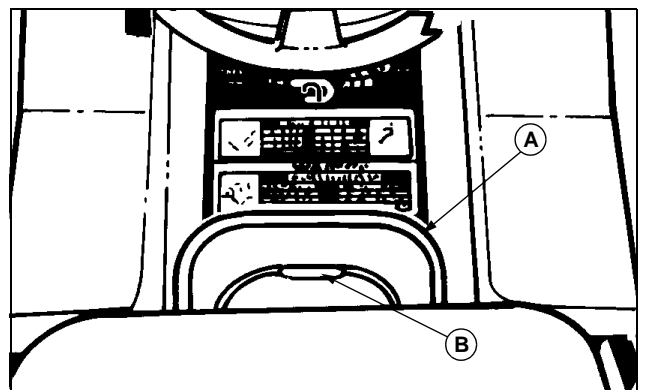
1. Push down on lift lever (A) slightly and hold locking lever (B) down with thumb.
2. Move lift lever (A) DOWN to LOWER mower or UP to RAISE mower.
3. Release locking lever lock (B) to keep lift lever (A) in position.

Adjusting Cutting Height

Cutting height can be adjusted from 38 – 102 mm (1-1/2 – 4 in).

Check tractor tire pressure. (See Checking Tire Pressure in Service Miscellaneous section.)

To adjust cutting height:



1. Push down on lift lever (A) slightly and hold locking lever (B) down with thumb.
2. Move lift lever (A) to desired cutting height.
3. Release locking lever (B) to keep lift lever (A) in position.

OPERATING MOWER

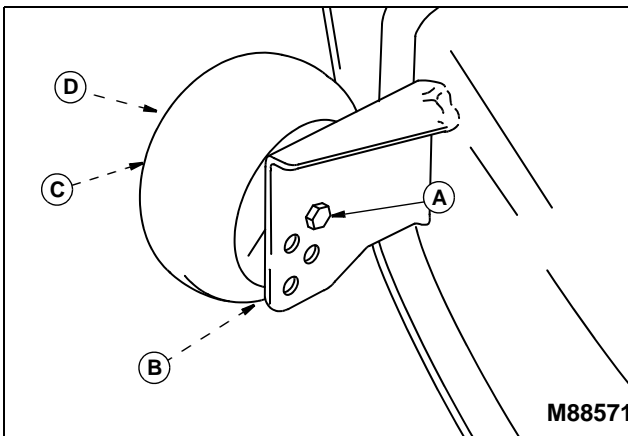
4. Adjust gage wheels to match cut height desired. (See Adjusting Mower Gage Wheels below.)

Adjusting Mower Gage Wheels

CAUTION: Avoid injury! Before you adjust gage wheels: STOP engine, remove key, and wait for blades to STOP.

IMPORTANT: Avoid damage! Mower gage wheels must not ride on ground to support mower weight. Adjust gage wheels each time you change cutting height.

1. Check tractor tire pressure. Inflate tires to the correct pressure. (See Checking Tire Pressure in Service - Miscellaneous section.)
2. Raise mower lift lever to TRANSPORT (upper) position and adjust cutting height. (See Adjusting Cutting Height in this section.)



3. Remove bolt (A), bushing (B), washer (C), and nut (D).
4. Move lift lever down to desired MOWING position.
5. Move mower gage wheels, one on each side, to one of four holes for desired position. On 46-Inch Mower Deck, move front and rear gage wheels.
6. Bottom of gage wheels should be approximately 6-13 mm (1/4-1/2 in) from the ground when properly adjusted.
7. Install bolt and tighten with nut.

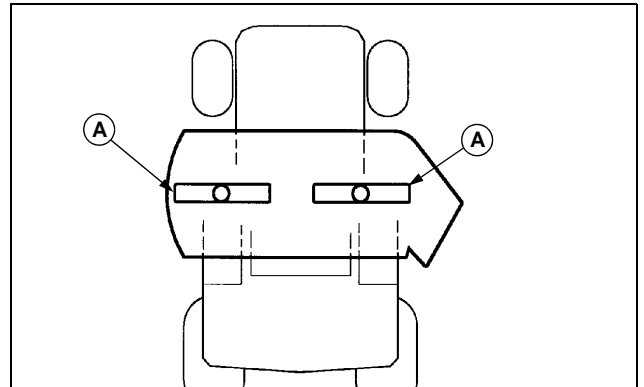
Adjusting Mower Level (Side-to-Side)

CAUTION: Avoid injury! Before you adjust mower: STOP engine, remove key, and wait for blades to STOP.

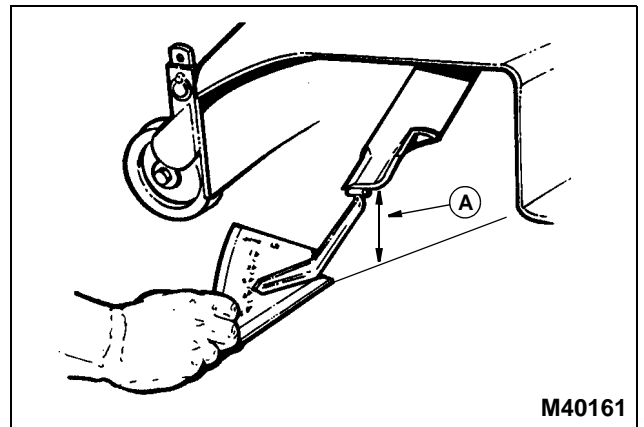
Be careful, sharp edges on mower blades. Always wear gloves when handling mower blades.

NOTE: A deck leveling gauge (Part Number TY15272) to aid in deck leveling may be obtained through your local Authorized Service Center at a nominal cost.

1. Park tractor on a hard, level surface.
2. Stop engine and remove key.
3. CHECK: Tire pressures must be correct. (See Checking Tire Pressure in Service – Miscellaneous section.)
4. Adjust cutting height to middle position.

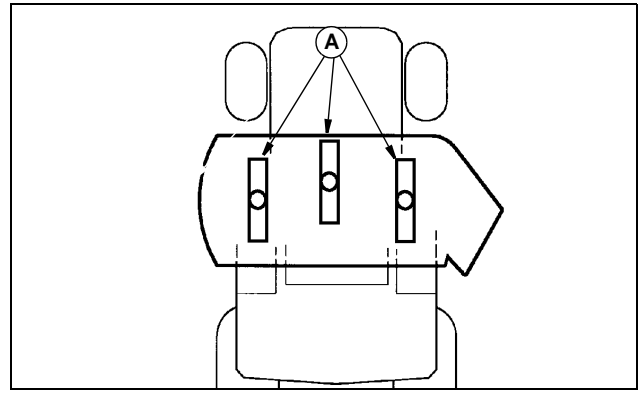
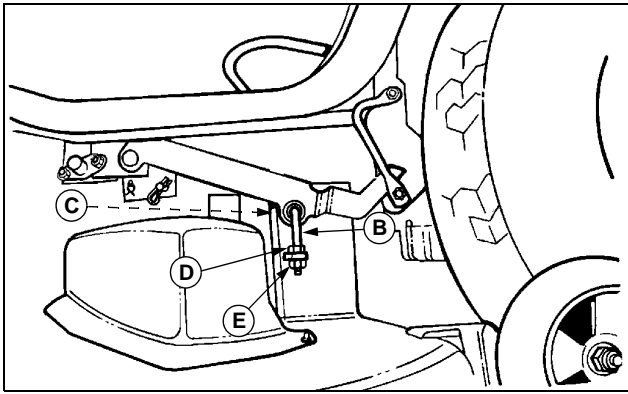


5. Turn left blade parallel to tractor axle. Hold drive belt and turn right blade parallel to axle.



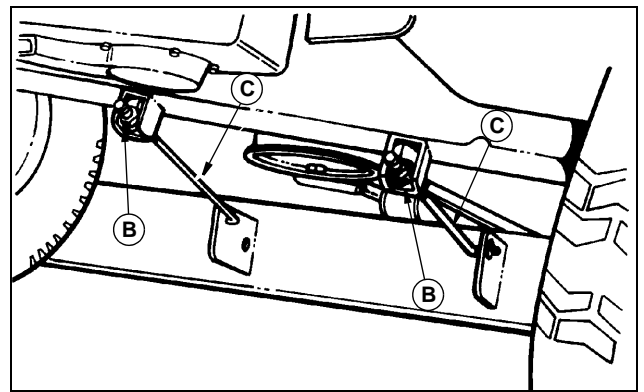
6. Measure from each outside blade tip (A) to the level surface. The difference between measurements must not be more than 3 mm (1/8 in).

OPERATING MOWER



7. Loosen top clamping nut (C) facing inside of mower, on left hand side J-bolt (B), approximately one turn.
8. Loosen upper adjusting nut (D).
9. Raise or lower left side of deck.
 - To raise: Turn lower adjusting nut (E) towards rear of tractor.
 - To lower: Turn lower adjusting nut (E) towards front of tractor.
10. Tighten upper adjusting nut.
11. Tighten clamping nut.
12. Check side-to-side measurements and readjust if necessary.

4. Turn blades so front blade tips (A) point straight forward.
5. Measure from the front of each blade tip to the level surface. The front blade tips must be **6–9 mm (1/4–3/8 in.)** lower than rear blade tips or blades will cut grass twice and grass tips will turn brown.



Adjusting Mower Level (Front-to-Rear)



CAUTION: Avoid injury! Before you adjust mower: STOP engine, remove key, and wait for blades to STOP.

Be careful, sharp edges on mower blades. Always wear gloves when handling mower blades.

IMPORTANT: Avoid damage! Make sure each front draft rod is equally tensioned. The installed rods should exhibit identical amounts of movement between left and right rods. If one rod moves more freely than the other, the adjustment nut should be tightened until the movement of the assembly matches that of the other side.

1. Park tractor on a hard, level surface.
2. Stop engine and remove key.
3. CHECK: Tire pressure must be correct. (See Checking Tire Pressure in Service – Miscellaneous section.)

6. Turn nuts (B) on front draft rods (C) equally until adjustment is correct. Turn nut clockwise to RAISE front of mower deck or counterclockwise to LOWER front of mower deck.

7. Check front-to-rear deck measurements and readjust if necessary.

Engaging and Disengaging Mower

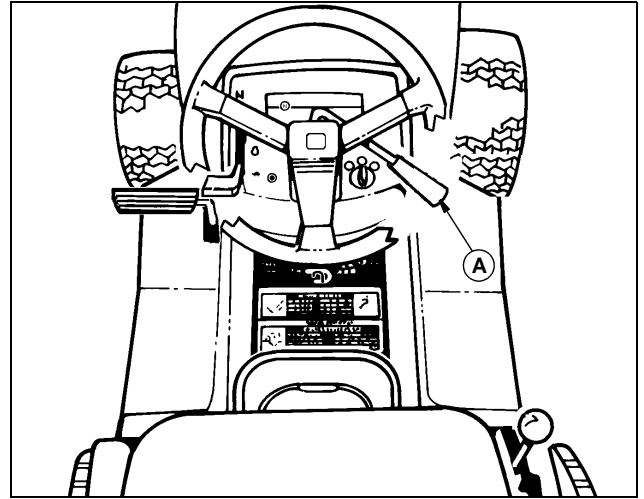
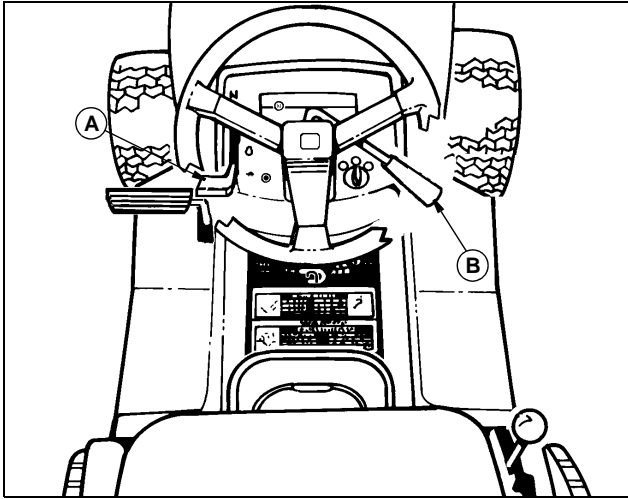
IMPORTANT: Avoid damage! Operate engine at maximum speed when mowing or after mower blade is engaged.

Machine may require 2–3 minutes warm-up period before engaging the mower deck.

Engaging Mower

1. START engine.

OPERATING MOWER



2. Move throttle lever (A) to the FAST (🐎) position.
3. Lower mower to cutting height.
4. Push PTO drive lever (B) forward to ENGAGE mower blades.

NOTE: The engine and mower will stop as the drive lever is moved rearward (Automatic Model) or the gear shift lever is moved to the R (REVERSE) position (Gear Model) with mower engaged.

5. Disengage PTO before shifting to REVERSE.

Disengaging Mower

1. Pull PTO drive lever (A) back to DISENGAGE mower blades.
2. If you hit an object with mower while mowing, STOP mower and engine immediately. Inspect mower for damage.

Dismounting to Inspect or Unplug Mower or Optional Bagger



CAUTION: Avoid injury! To help prevent personal injury, do the following steps before you dismount to inspect or unplug mower or bagger.

1. STOP machine.

2. Pull PTO drive lever (A) back to DISENGAGE mower blades.
3. Move throttle lever to SLOW (🐢) position.
4. Lower mower to the ground.
5. LOCK park brake.
6. STOP engine.
7. Remove key.
8. Wait for all moving parts to STOP.

Using Mower Deck Side Discharge - 42-Inch Mower Decks

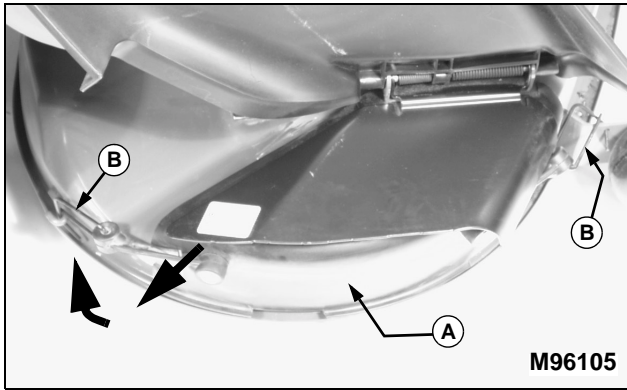


CAUTION: Avoid injury! Before you adjust mower: STOP engine, remove key, and wait for blades to STOP.

Be careful, sharp edges on mower blades. Always wear gloves when handling mower blades.

NOTE: For maximum side discharge operation, it may be necessary to change the mower blades, see *Servicing Mower Blades* in the **SERVICE MOWER** section.

OPERATING MOWER



To set-up and operate the 42" deck for side discharge operation the factory installed mulch cover (A) must be removed.

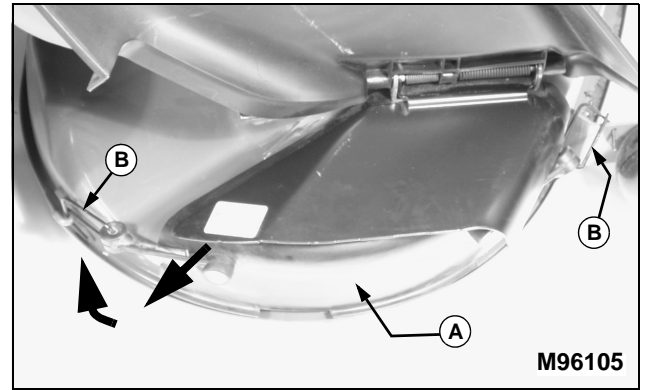
1. Remove mulch cover:
 - Lift plastic discharge chute.
 - Grasp corner of steel chute, pull outward to unlock and pivot up.
 - Unhook both rubber hooks (B) and remove mulch cover.
2. Store mulch cover in a well protected area and have it readily available for when you want to use deck as a mulching deck.

Using Mower Deck Mulch Ready - 42-Inch Mower Decks

CAUTION: Avoid injury! Before you adjust mower: STOP engine, remove key, and wait for blades to STOP.

Be careful, sharp edges on mower blades. Always wear gloves when handling mower blades.

NOTE: For maximum mulching operation, it may be necessary to change the mower blades, see *Servicing Mower Blades* in the **SERVICE MOWER** section.



To set-up and operate the 42" deck for mulching operation the factory installed mulch cover (A) must be installed.

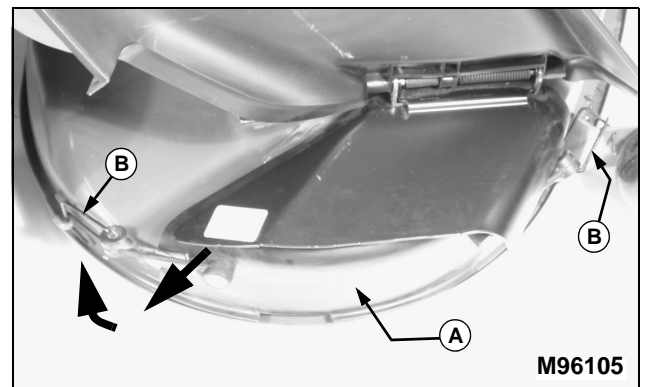
1. Install mulch cover:
 - Lift plastic discharge chute.
 - Grasp corner of steel chute, pull outward to unlock and pivot up.
 - Install mulch cover into deck discharge opening and hook both rubber hooks (B).

Using Mower Deck with Optional Equipment - 42-Inch Mower Decks

CAUTION: Avoid injury! Before you adjust mower: STOP engine, remove key, and wait for blades to STOP.

Be careful, sharp edges on mower blades. Always wear gloves when handling mower blades.

NOTE: For maximum mower deck operation, it may be necessary to change the mower blades, see *Servicing Mower Blades* in the **SERVICE MOWER** section.



To set-up and operate the 42" deck for either the 2-Bag Bagger or Mulch Plug Kit the factory installed mulch cover

OPERATING MOWER

(A) must be removed.

1. Remove mulch cover:

- Lift plastic discharge chute.
- Grasp corner of steel chute, pull outward to unlock and pivot up.
- Unhook both rubber hooks (B) and remove mulch cover.

2. Store mulch cover in a well protected area and have it readily available for when you want to use deck as a standard mulching deck.

REPLACEMENT PARTS

Service Literature

If you would like a copy of the Parts Catalog or Technical Manual for this machine call:

- **U.S. & Canada:** 1-800-522-7448.
- **All Other Regions:** Your John Deere dealer.

John Deere Quality

We recommend John Deere quality parts and lubricants, available at your Authorized Service Center.

Part numbers may change, use part numbers listed below when you order. If a number changes, your dealer will have the latest number.

When you order parts, your Authorized Service Center needs your machine serial number and engine serial number. These are the numbers that you have recorded on the inside front cover of this manual.

Touch-up paint is available in 340 grams (12 oz.) aerosol cans. Scotts Orange (part number: TY24745) and Scotts Grey (part number: TY 24747)

Parts for S1642 Tractor

Item	Part Number
Air Cleaner Elements: Foam Paper	M92360 (Kohler - 12-083-08) LG496894S (Kohler-12-083-14)
Fuel Filter	AM38708
Oil Filter	AM125424 (Kohler - 12-050-01)
Battery	TY21752
Spark Plug	M78543 - Champion RC12YC
Fuse-15 amp	99M7065
Headlight Bulb	AD2062R (GE - 1156)
Ground Drive Belt	GX10065

Parts for S1742 Tractor

Item	Part Number
Air Cleaner Elements: Foam Paper	LG272403S (Briggs & Stratton - 272403) LG496894S (Briggs & Stratton - 496894)
Fuel Filter	AM38708
Oil Filter	AM125424 (Briggs & Stratton - 491056)
Battery	TY21752
Spark Plug	M78543 - Champion RC12YC
Fuse-15 amp	99M7065
Headlight Bulb	AD2062R (GE - 1156)
Ground Drive Belt	GX10065

Parts for S2046 Tractor

Item	Part Number
Air Cleaner Elements: Foam Paper	LG273638 (Briggs & Stratton - 691016) LG499486 (Briggs & Stratton - 691007)
Fuel Filter	AM38708
Oil Filter	AM125424 (Briggs & Stratton - 691041)
Battery	TY21752
Spark Plug	M78543 - Champion RC12YC
Fuse-15 amp	99M7065
Headlight Bulb	AD2062R (GE - 1156)
Ground Drive Belt	GX10065

REPLACEMENT PARTS

Parts for 42-Inch Mower Deck

Item	Part Number
Blades:	
Standard	M139802 or M139803
Bagger	M139803
Mulch	M139802
Mower Drive Belts	M124895
Leveling Gauge	TY15272

Parts for 46-Inch Mower Deck

Item	Part Number
Blades:	
Standard	M127466
Bagger	N/A
Mulch	M119232
Mower Drive Belts	GX10176
Leveling Gauge	TY15272

(Part numbers are subject to change without notice. Part Numbers may be different outside the U.S.A.)

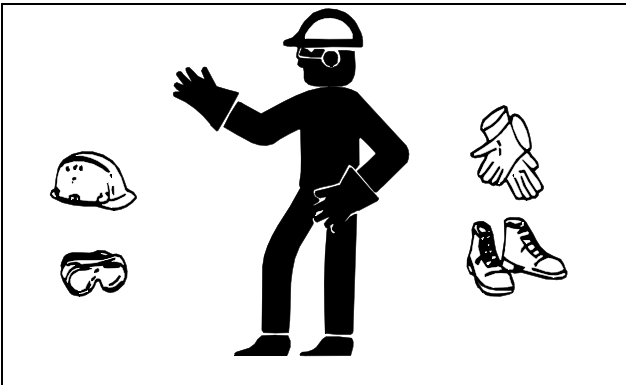
SERVICE MACHINE SAFELY

Practice Safe Maintenance



- Understand service procedure before doing work. Keep area clean and dry.
- Never lubricate, service, or adjust machine while it is moving. Keep safety devices in place and in working condition. Keep hardware tight.
- To prevent them from getting caught, keep hands, feet, clothing, jewelry, and long hair away from any moving parts.
- Before servicing machine, disengage all power and stop the engine. Lock park brake and remove the key. Let engine cool.
- Securely support any machine elements that must be raised for service work.
- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.
- Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.
- Unauthorized modifications to the machine may impair its function and safety.

Wear Appropriate Clothing

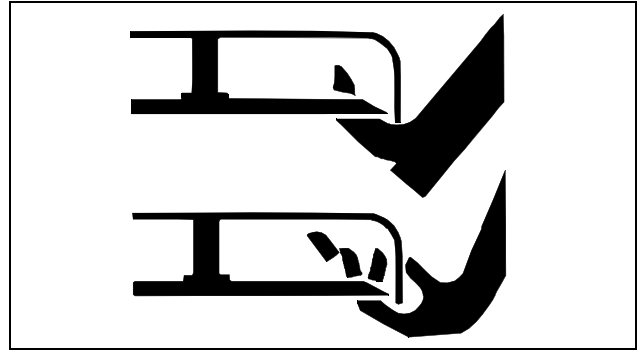


- Wear close fitting clothing and safety equipment appropriate for the job.
- Loud noise can cause impairment or loss of hearing,

wear a suitable protective device such as earplugs.

- Do not wear radio or music headphones while servicing the machine. Safe service requires your full attention.

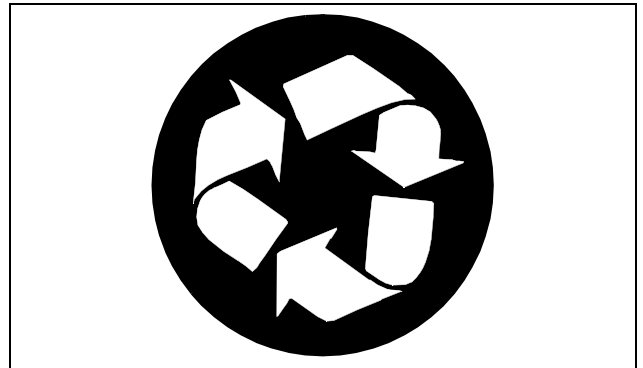
Avoid Injury From Contacting Blades



Before you unplug or adjust machine:

- STOP the engine.
- Remove key.
- Wait for blades to STOP.
- Keep hands, feet and clothing away from blades when engine is running.

Handling Waste Product and Chemicals



- Waste products such as used oil, fuel, coolant, brake fluid, and batteries, can harm the environment and people.
- DO NOT use beverage containers for waste fluids - someone may drink from them.
- See your local Recycling Center or John Deere dealer to learn how to recycle or get rid of waste products.
- A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques. See your John Deere dealer for the MSDS on chemical products used with your machine.

SERVICE INTERVAL CHART

Service Intervals

Please use the following timetables to perform routine maintenance on your machine. Service procedures included in this manual but not on this chart are to be performed on an as needed basis.

IMPORTANT: Avoid damage! If you operate mower in extreme heat, dust or other severe conditions, service more often than shown below.

Before Each Use	<ul style="list-style-type: none"> Check fuel level. Clean air intake screen. Test safety systems. Check tire pressure. Check/tighten loose hardware. Check engine oil level.
After First 2 Hours	<ul style="list-style-type: none"> Check blade belt tension.
After First 5 Hours	<ul style="list-style-type: none"> Change engine oil.
Every 8 Hours	<ul style="list-style-type: none"> Check oil level. Check brakes. Check tire pressure.
Every 25 Hours	<ul style="list-style-type: none"> Sharpen/replace blades. Lubricate front wheel spindles. Lubricate wheel bearings. Check battery and clean battery terminals. Change engine oil when operating under heavy load or in high temperatures.* Clean/Service air cleaner elements.* Check spindle brake measurement
Every 50 Hours	<ul style="list-style-type: none"> Change engine oil.*
Every 100 Hours	<ul style="list-style-type: none"> Check/tighten loose hardware. Adjust drive belt tension. Replace oil filter. Clean/Service air cleaner elements.* Replace spark plug. Replace fuel filter.
Every Season	<ul style="list-style-type: none"> Adjust blade belt tension. Check spindle brake measurement
Before Storage	<ul style="list-style-type: none"> Check/tighten loose hardware. Lubricate front wheel spindles. Lubricate wheel bearings. Clean battery terminals.

SERVICE INTERVAL CHART

Service Record

DATE	SERVICE PERFORMED

SERVICE ENGINE

Engine Warranty Maintenance Statement

Maintenance, repair, or replacement of the emission control devices and systems on this engine, which are being done at the customer's expense, may be performed by any non-road engine repair establishment or individual. Warranty repairs must be performed by an authorized John Deere dealer.

Adjusting Carburetor

NOTE: Carburetor is calibrated by the engine manufacturer and should not require any adjustments.

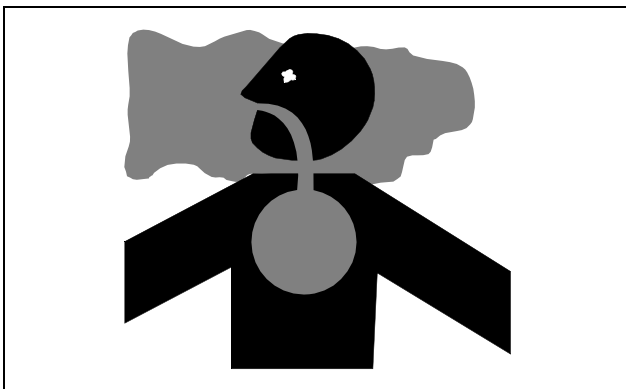
If engine is operated at altitudes above 1829 m (6,000 ft.), some carburetors may require a special high altitude main jet. See your John Deere dealer.

Possible engine surging will occur at high rpm with no load (with transmission in "N" neutral and mower blade engagement lever disengaged). This is a normal condition due to the emission control system.

If engine is hard to start or runs rough, check the Troubleshooting section of this manual.

After performing the checks in the troubleshooting section and your engine is still not performing correctly, contact your John Deere dealer.

Avoid Fumes



CAUTION: Avoid injury! Engine exhaust fumes can cause sickness or death:

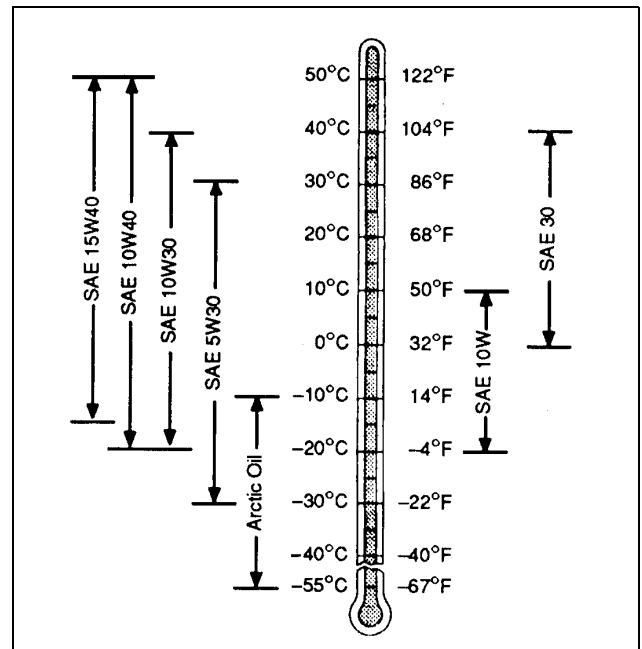
- If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension to remove the fumes.
- Always try to work in a well ventilated area.

Engine Oil



CAUTION: Avoid injury! To prevent injury from accidental starting, always remove wire from spark plugs and disconnect battery at negative terminal before servicing engine.

NOTE: Air cooled engines run hotter than automobile engines. The use of multi-viscosity oil such as (10W-30) in ambient temperatures above 4° C (40° F) will result in higher than normal oil consumption. If multi-viscosity oil used, check oil level more frequently to prevent any possible damage due to lack of lubrication.



Use oil viscosity based on the expected air temperature range during the period between oil changes.

Use a high quality detergent oil classified as:

- API Service Classification SG
- API Service Classification SF

Checking Engine Oil

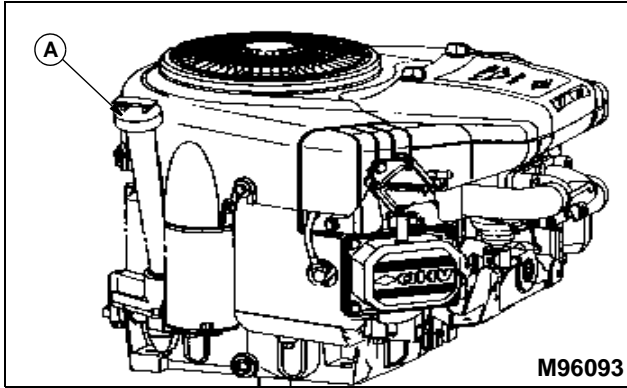
IMPORTANT: Avoid damage! To avoid engine damage, DO NOT run engine if oil level is below ADD mark.

NOTE: Engine must not be running.

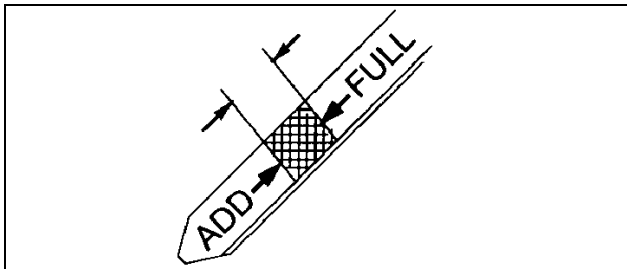
Make sure engine is COLD when checking engine oil level.

SERVICE ENGINE

1. Park tractor on a level surface. STOP engine. Let engine cool.
2. Lift hood.
3. Clean area around dipstick to prevent debris from falling into crankcase.



4. Remove dipstick (A). Wipe with clean cloth.
5. Install dipstick:
 - **S1642** - Install dipstick in tube, but DO NOT tighten it. Let dipstick threads rest on top of tube, turn cap counterclockwise until it “clicks” or starts to engage threads.
 - **S1742 and S2046** - Install and tighten dipstick.
6. Remove dipstick.



7. Check oil level on dipstick. Oil must be between ADD and FULL marks.
8. If oil level is low, add oil to bring oil level no higher than FULL on dipstick.
9. Install and tighten dipstick. Lower hood.

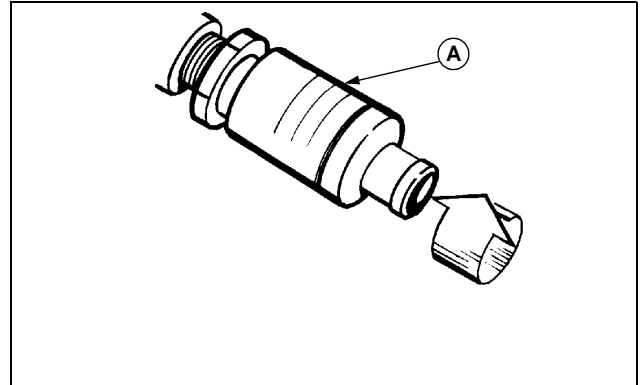
Changing Engine Oil and Filter



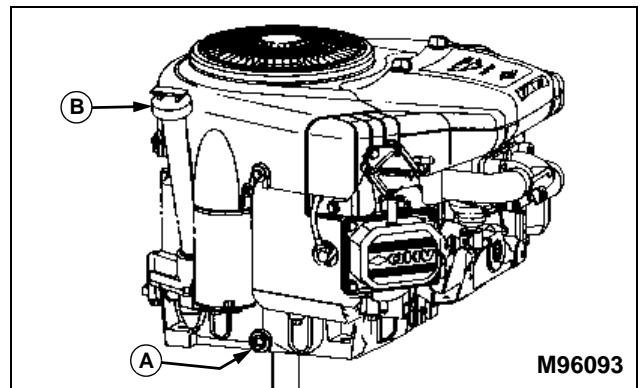
CAUTION: Avoid injury! Engine may be hot, be careful not to burn hands.

IMPORTANT: Avoid damage! To extend engine life, when operating mower in extreme heat, dust or other severe conditions, it may be necessary to change engine oil and filter more frequently.

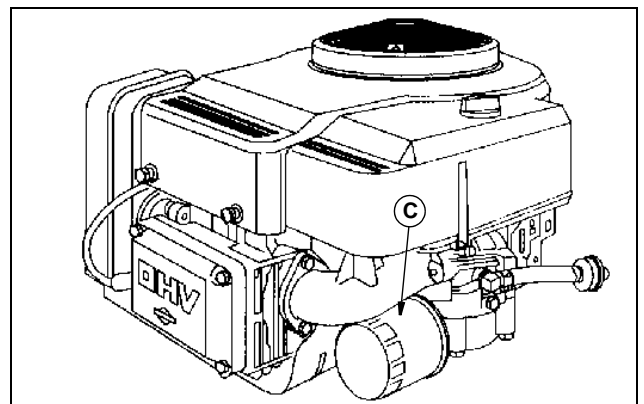
1. Run engine to warm oil.
2. Park tractor on level surface. STOP engine. LOCK park brake and remove key.
3. Lift hood.
4. Put drain pan under drain valve.



5. Unsnap the dust cap, push and twist to open oil drain (A) and drain oil into oil drain pan.



6. Close drain cap.

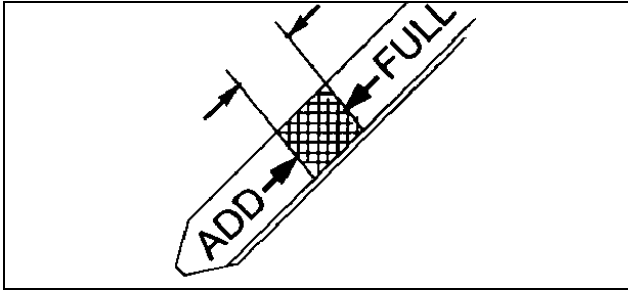


7. Remove old filter (C) and wipe off filter tray with a clean

SERVICE ENGINE

cloth.

- Lightly oil filter gasket with fresh, clean oil.
- Install replacement oil filter. Turn oil filter to the right (clockwise) until rubber gasket contacts filter adapter. Tighten filter an additional one-half turn.
- Remove dipstick (B) and refill with new oil of recommended grade. (See Engine Oil in this section.)

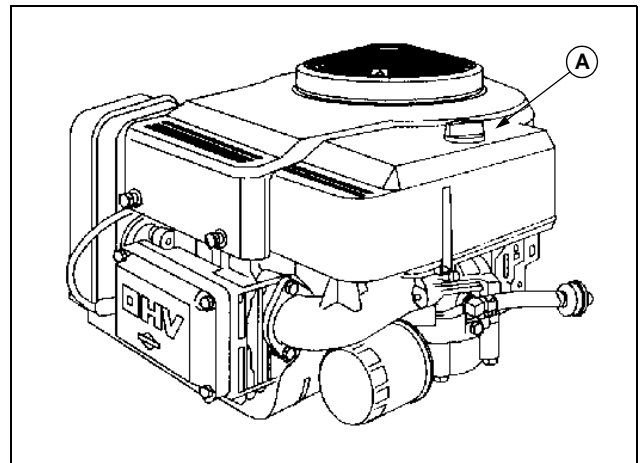


- Check oil level. For correct procedure see Checking Oil Level in this section.
- Oil level must be between ADD and FULL marks. Do not overfill.
- Install and tighten dipstick. Lower hood.
- Start engine and check for oil leaks. Correct any leaks before operating.
- Run engine at idle for 30 seconds. Stop engine. Wait 30 seconds and check oil level.
- If necessary, add oil to bring level to FULL mark on dipstick.

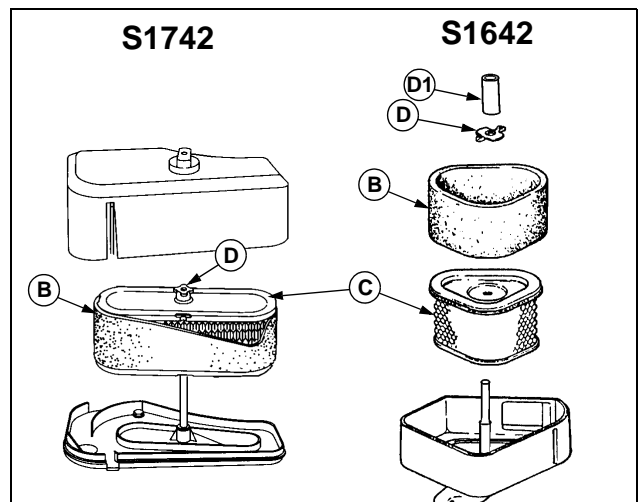
Checking and Cleaning Air Cleaner Elements - S1642 and S1742

NOTE: It may be necessary to check the air filter more frequently if operating vehicle in dusty conditions.

- Lift hood.
- Clean any dirt and debris from the air cleaner before removing cover.



- Remove cover (A).



- Inspect foam precleaner (B) and element (C) without removing.
- If precleaner (B) is dirty, carefully remove from filter, leaving element (C) in the air cleaner housing.

NOTE: DO NOT wash paper element.

- Wash precleaner (B) in a solution of warm water and liquid detergent.
- Rinse precleaner thoroughly. Squeeze out excess water in a dry cloth until precleaner is completely dry.
- Put approximately 30 ml. (1 oz.) of clean engine oil onto precleaner. Squeeze precleaner to distribute oil evenly. Squeeze out excess oil with a clean cloth.

SERVICE ENGINE

IMPORTANT: Avoid damage! A damaged paper element (C) can allow dirt into the carburetor and can cause poor engine performance, engine damage or failure:

- **DO NOT** attempt to clean paper element by tapping against another object.
- Replace element **ONLY** if very dirty.
- **DO NOT** use pressurized air to clean element.
- If element is damaged or the seal is cracked, replace.

9. Remove and replace filter element (C) **ONLY** if damaged or very dirty:

- S1642 Only - Remove rubber tube sleeve (D1).
- Remove wing nut (D).
- Carefully remove paper element (E) from air cleaner housing. REPLACE with NEW element.

10. Carefully remove element (C) from air cleaner housing. Replace with a NEW element.

11. Carefully clean air cleaner housing. Prevent any dirt from falling into carburetor.

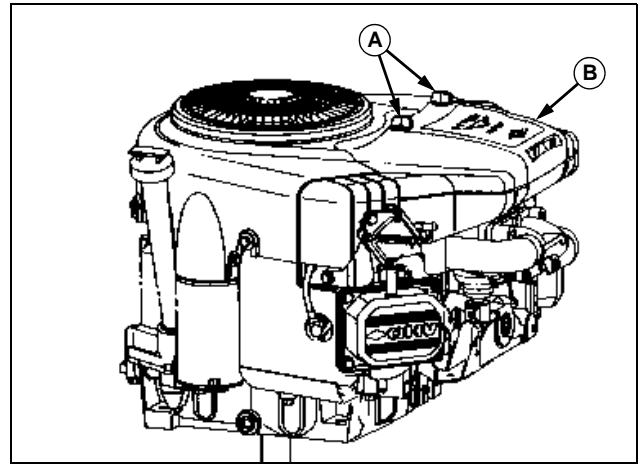
12. Install precleaner onto new filter element and install into air cleaner housing.

13. Install cover. Lower hood.

Checking and Cleaning Air Cleaner Elements - S2046

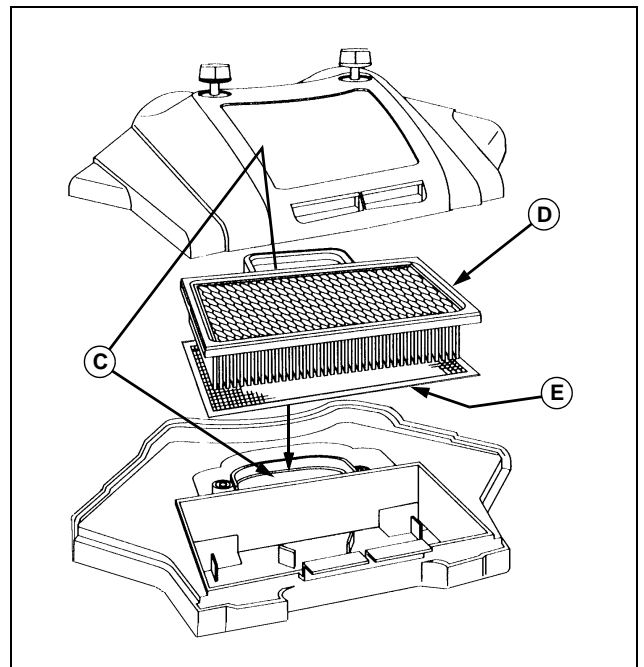
IMPORTANT: Avoid damage! To extend engine life, when operating mower in extreme heat, dust or other severe conditions, it may be necessary to check/replace air cleaner more frequently.

1. Lift hood.
2. Clean any dirt and debris from the air cleaner before removing cover.



3. Loosen knob (A) and remove cover (B).

IMPORTANT: Avoid damage! To prevent engine damage, DO NOT allow any foreign objects to fall into the carburetor air intake (C).



4. Avoid dropping anything into the carburetor air intake (C). If anything falls into the carburetor air intake it **MUST** be removed.
5. Lift out filter cartridge (D) and foam pre-cleaner (E).
6. Service pre-cleaner:
 - Wash pre-cleaner in a solution of warm water and liquid detergent.
 - Rinse pre-cleaner thoroughly. Squeeze out excess water in a dry cloth until pre-cleaner is completely dry.
 - Put approximately 30 ml. (1 oz.) of clean engine oil

SERVICE ENGINE

onto precleaner. Squeeze precleaner to distribute oil evenly. Squeeze out excess oil with a clean cloth.

IMPORTANT: Avoid damage! A damaged cartridge (D) can allow dirt into the carburetor and can cause poor engine performance, engine damage or failure:

- **DO NOT attempt to clean cartridge by tapping against another object.**
- **Replace cartridge ONLY if very dirty.**
- **DO NOT use pressurized air to clean cartridge.**
- **If cartridge is damaged or the seal is cracked, replace.**

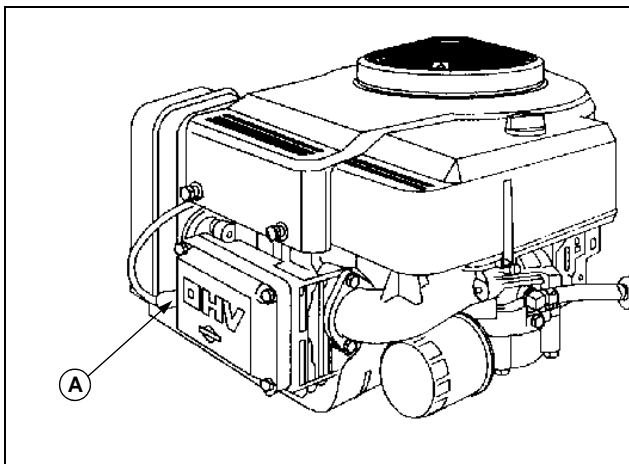
7. Inspect cartridge for damage or excessive dirt. Replace if necessary.
8. Carefully clean air cleaner housing. Prevent any dirt from falling into carburetor.
9. Install foam precleaner (E) mesh side up.
10. Install cartridge. Make sure cartridge and seal are properly seated and sealing the carburetor air intake area.
11. Install air cleaner cover and tighten knobs. **DO NOT** overtighten.
12. Lower hood.

Checking Spark Plugs



CAUTION: Avoid injury! Before you remove spark plugs, STOP engine and wait until engine is cool.

1. Stop engine. LOCK park brake. Remove key. Lift hood.



2. Disconnect spark plug wire(s) (A) and remove spark

plug(s):

- S1642 and S1742: ONE spark plug
 - S2046: TWO spark plugs.
3. Clean spark plug(s) carefully with a wire brush.
 4. Inspect plug for:
 - Cracked porcelain.
 - Pitted or damaged electrodes.
 - Other wear or damage.
 5. Replace spark plug(s) if necessary.



6. Check plug gap with a wire feeler gauge:
 - S1742 and S2046: Gap should be 0.76 mm (0.030 in.)
 - S1642: Gap should be 1.02 mm (0.040 in.)
7. To change gap, move the outer electrode.
8. Install and tighten spark plug(s):
 - If you have a torque wrench, tighten plug(s) to: 20 N•m (15 lb-ft.).
9. Connect the spark plug wire(s).
10. Lower hood.

Replacing Fuel Filter



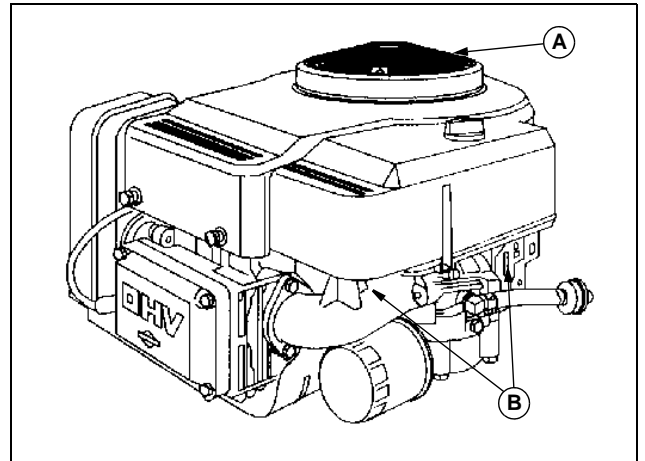
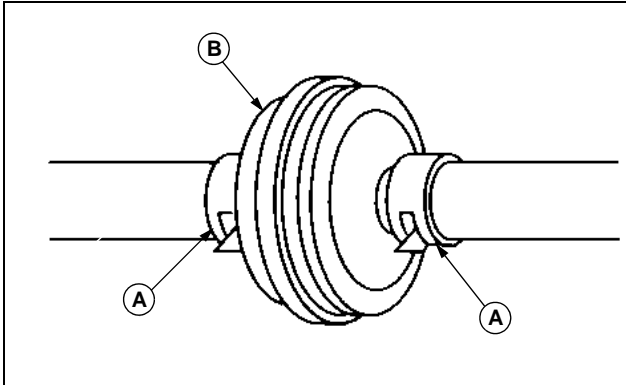
CAUTION: Avoid injury! Keep cigarettes, sparks, and flames away from the fuel system. Make sure engine is cool to the touch.

IMPORTANT: Avoid damage! When disconnecting fuel tank hose from filter, be sure to hold hose above fuel tank level so fuel does not run out.

SERVICE ENGINE

NOTE: Change filter when fuel is low in fuel tank.

1. Park tractor on a level surface.
2. STOP engine. LOCK park brake. Remove key. Let engine COOL.
3. Lift hood.



4. Using pliers, slide hose clamps (A) away from fuel filter (B).
5. Disconnect hoses from filter and remove filter.
6. Connect hoses to new filter.
7. Install clamps and check for leaks.
8. Lower hood.

3. Clean air intake screen (A), and external engine areas (B) with rag, brush, vacuum or compressed air.
4. Lower hood.

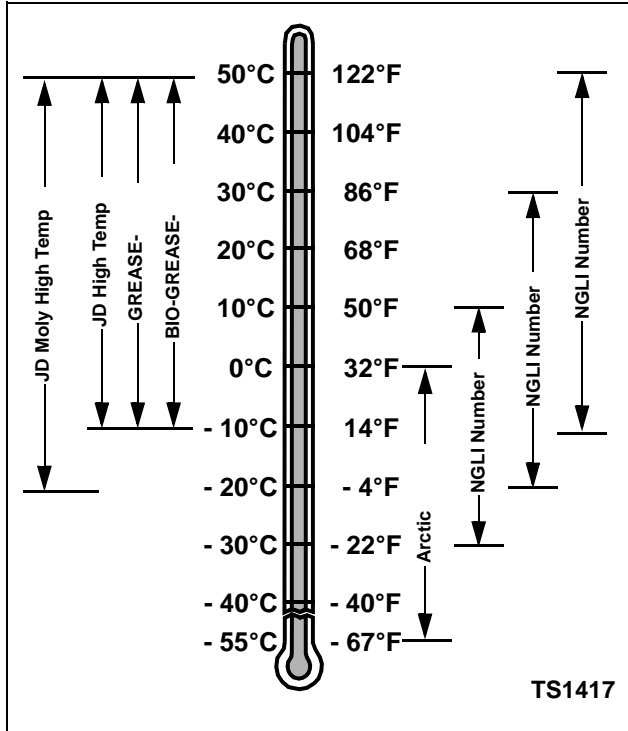
Clean Air Intake Screen and Engine

IMPORTANT: Avoid damage! To avoid overheating and damage to engine: Keep air intake screen free of dust and debris. Keep governor linkage, springs and controls free of dust and debris.

1. STOP engine. LOCK park brake and remove key.
2. Lift hood.

SERVICE STEERING AND BRAKES

Grease

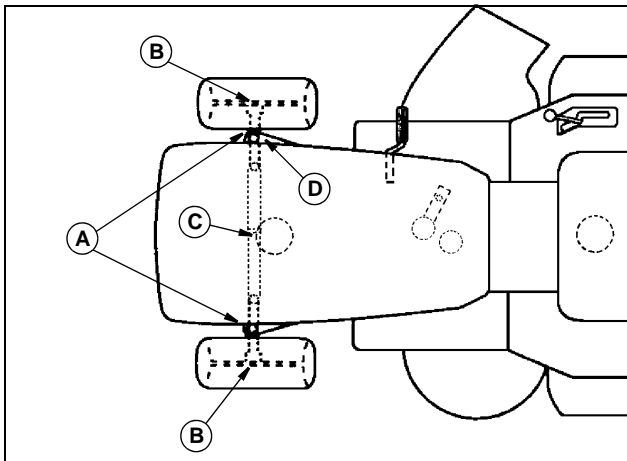


Use grease based on the expected air temperature range during the service interval.

The following greases may be used:

- SAE Multipurpose EP Grease with 3 to 5 percent molybdenum disulfide.
- SAE Multipurpose EP Grease.
- Greases meeting Military Specification MIL-G-10924C may be used as arctic grease.

Lubricating Front Wheel Spindles, Wheel Bearings and Axle Pivot



Park tractor on flat, level surface. STOP engine, LOCK park brake, DISENGAGE PTO lever, turn key to the OFF position, and remove key.

With a safe lifting device, lift front of tractor just high enough to pivot axle.

Wheel Spindles

Lubricate wheel spindles (A), one on each side of tractor with multipurpose EP grease or an equivalent.

Turn steering wheel to a full left turn and then full right turn to distribute grease in spindles.

Axle Pivot

Lubricate axle pivot (C) with multipurpose EP grease or an equivalent.

Pivot axle up and down to distribute grease in pivot.

Drag Link

Lubricate drag link (D) with multipurpose EP grease or an equivalent.

Pivot axle up and down to distribute grease in pivot.

Wheel Bearings - S2046 Only

Lubricate front wheel bearings (B), one on each side of tractor with multipurpose EP grease or an equivalent.

Spin wheels to distribute grease in bearings.

Lower front of tractor to ground.

Adjusting Brakes - Gear

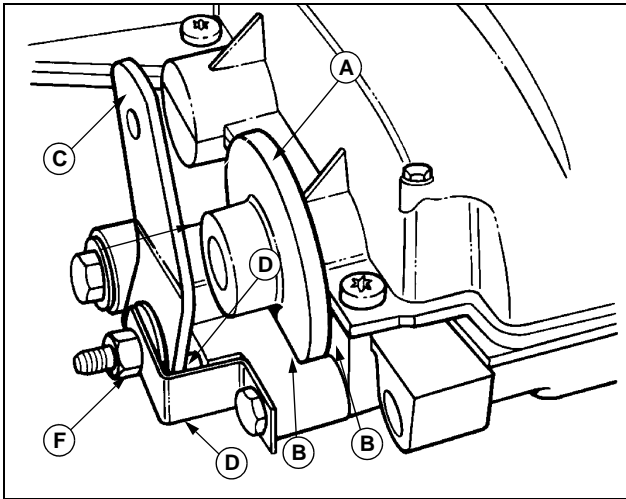


CAUTION: Avoid injury! Before adjusting brakes: STOP engine. Remove key. Wait for all moving parts to STOP.

1. Park tractor on flat, level surface. STOP engine, LOCK park brake, DISENGAGE PTO lever, turn key to the OFF position, and remove key.

2. Check if:

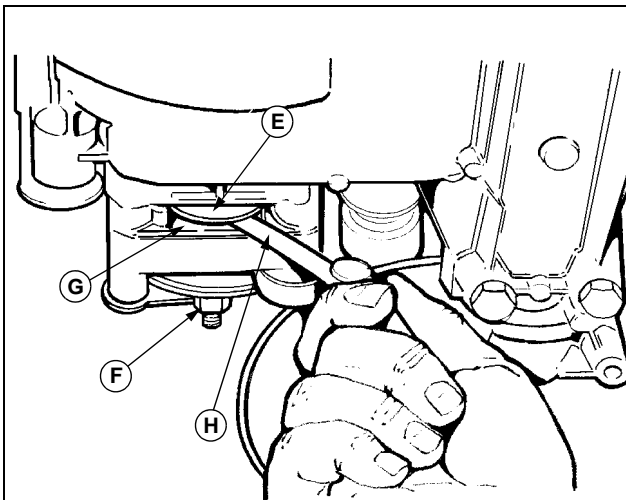
SERVICE STEERING AND BRAKES



- Brake disc (A) is contacting the case (B), AND/OR
- Brake lever (C) is contacting its mounting bracket (D), top or bottom.

If so, REPLACE friction pucks and brake disc BEFORE making adjustment. (See you Authorized Service Center.)

3. Block the front and rear wheels, and release the parking brake.



4. From the rear of the tractor, locate the brake disc (E), lock nut (F), and friction puck (G).
5. Insert a 0.25 mm (0.010 in.) shim gauge (H) between the disc and friction puck. The shim should slide with slight interference.

IF THE SHIM WILL NOT FIT:

- Loosen lock nut (F) until the shim slides in. Tighten the lock nut until the shim has slight interference.
- Remove the shim and cycle the brake pedal. Readjust if needed.

IF THE SHIM SLIDES FREELY:

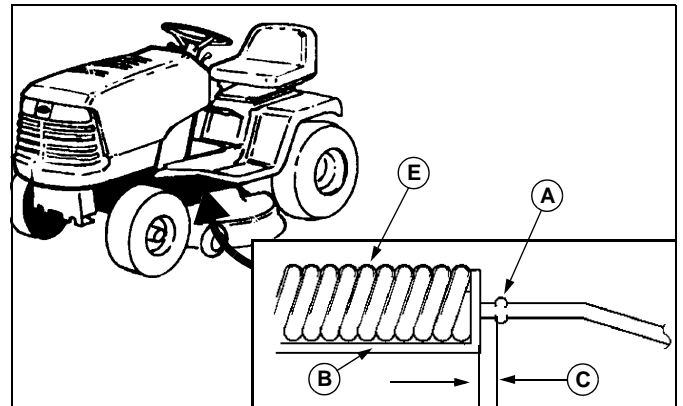
- Install the shim and tighten lock nut (F) until there is slight interference.
- Remove the shim and cycle the brake pedal. Readjust if needed.

Adjusting Brakes - Automatic Hand Control



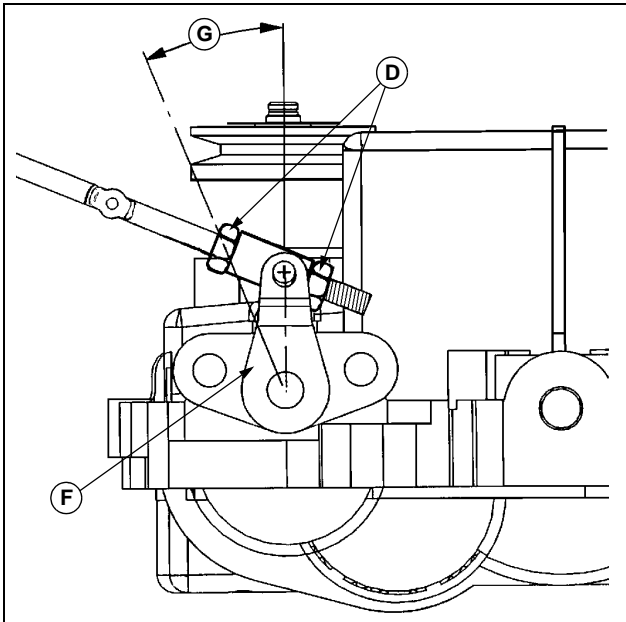
CAUTION: Avoid injury! Before adjusting brakes: STOP engine. Remove key. Wait for all moving parts to STOP.

1. Park tractor on flat, level surface. STOP engine, turn key to the OFF position, and remove key.
2. UNLOCK the park brake and release brake pedal.



3. Measure distance from inside of brake rod stop tabs (A) to outside of compression spring bracket (B) (located below foot tread area on left-hand side of transmission). Distance (C) should be 2 – 10 mm (0.08 – 0.40 in).

SERVICE STEERING AND BRAKES



- If distance is less than or equal to 2 mm (0.08 in):
 - Gradually adjust jam nuts (D) until specified measurement is obtained.
 - Depress brake pedal and LOCK park brake.
 - Measure the distance between edge of compression spring bracket and front edge of brake rod stop tabs. Gap should have a minimum distance of 2 mm (0.08 in).
 - Check brake rod compression spring (E). It should not be completely compressed when park brake is locked. A slight air gap should be visible between the coils when proper adjustment is reached.
 - Recycle park brake a few times and measure distances each time until specified measurements are obtained.
 - Brake lever (F) travel should not exceed 30° (G). If it does, measure brake components individually.

SPECIFICATIONS:

- Spring bracket to stop tabs (minimum): 2 mm (0.08 in)
- Brake lever travel (maximum): 30°

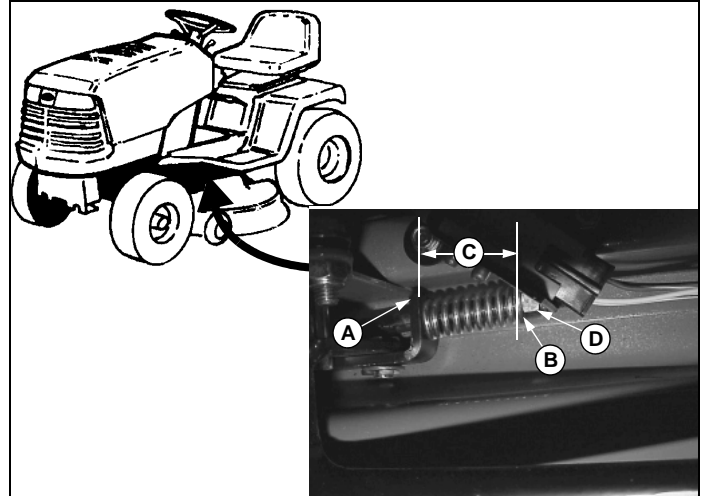
Adjusting Brakes - Automatic Foot Control



CAUTION: Avoid injury! Before adjusting brakes: STOP engine. Remove key. Wait for all moving parts to STOP.

- Park tractor on flat, level surface. STOP engine, turn key to the OFF position, and remove key.

- LOCK the park brake.

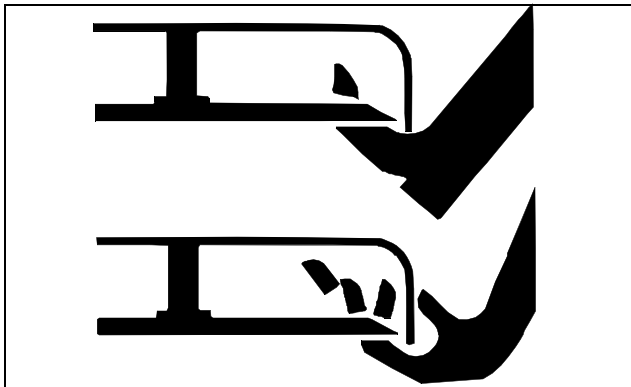


- Measure distance of the compressed brake spring from bracket (A) to washer (B) (located below foot tread area on left-hand side of transmission). Distance (C) should be 42-43 mm (1.65 - 1.69 in).

If distance (C) is greater than 43 mm (1.69 in) or less than 42 mm (1.65 in), gradually adjust nut (D) until specified measurement is achieved.

SERVICE MOWER

Avoid Injury From Contacting Blades



CAUTION: Avoid injury! Before you unplug, adjust or service mower:

- **DISENGAGE PTO** switch to stop mower blades.
- Wait for mower blades to **STOP**.
- **LOCK** the park brake.
- **STOP** the engine.
- Remove the key.

Clean unit by removing all grass clippings and dirt from mower deck.

Disconnect spark plug wire from spark plug.

Mower Spindles

IMPORTANT: Avoid damage! Do NOT grease mower spindles. Grease zerks are for initial factory setup and are sealed. Attempting to grease the spindles may damage the seals and shorten the bearing life.

Replacing Mower Drive Belt

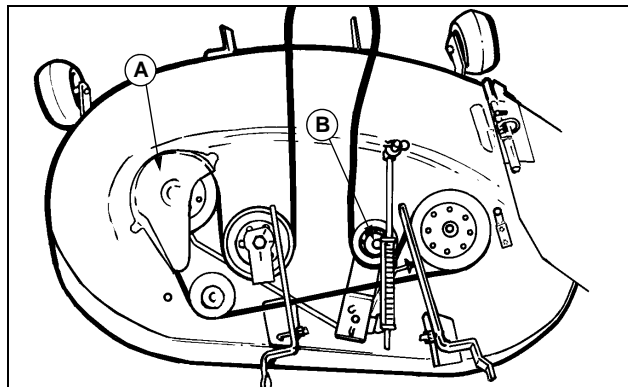


CAUTION: Avoid injury! Before replacing mower drive belt: STOP engine, remove key, wait for all moving parts to STOP, and wear gloves when replacing belt.

1. STOP engine, LOCK park brake, place gear shift lever in NEUTRAL (N) position, pull PTO drive lever back to DISENGAGE, turn key to the OFF position, and remove key.

2. Remove mower deck. (See Removing Mower in Removing Mower section.)

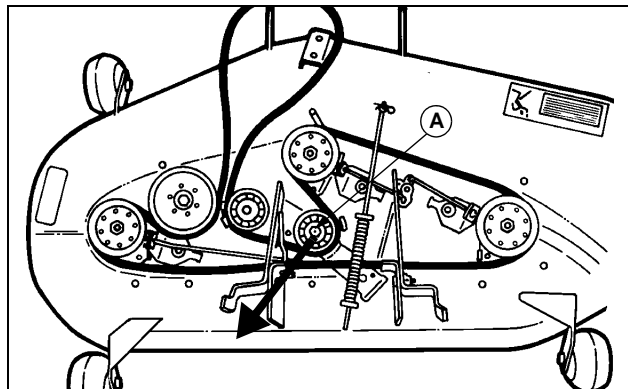
42-Inch Mower Deck



1. Remove two capscrews and belt guard (A).
2. Loosen pulley (B), move pulley to the right and remove mower drive belt from engine pulley and then remove from the mower.
3. Install belt in reverse order of removal.
4. Reinstall belt guard and tighten capscrews securely.

46-Inch Mower Deck

1. Remove six capscrews and left and right belt guards.



2. Pull pulley (A) to the left and remove mower drive belt from engine pulley and then remove from mower.
3. Install belt in reverse order of removal.
4. Reinstall belt guards and tighten capscrews securely.

Adjusting Mower Belt Tension

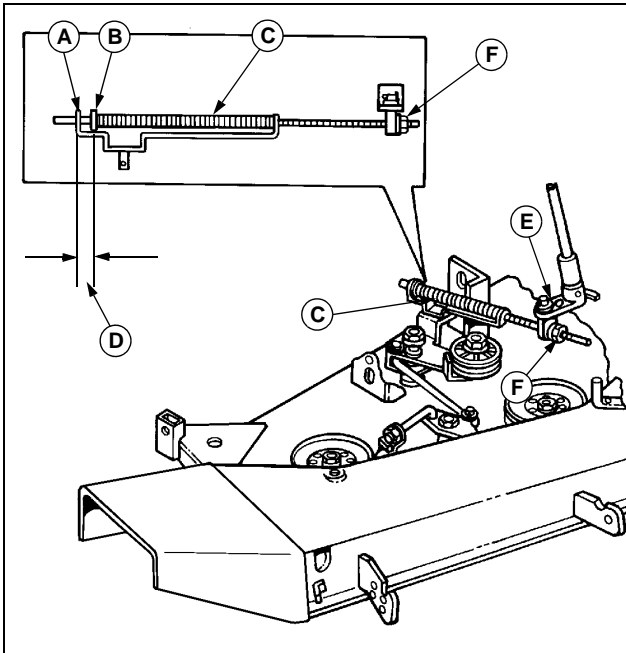


CAUTION: Avoid injury! Before adjusting Mower Belt Tension: STOP engine. Remove key. Wait for all moving parts to STOP.

SERVICE MOWER

IMPORTANT: Avoid damage! Spindle brake engagement must be checked every time the mower belt tension is adjusted or belt damage may occur.

1. Park tractor on a hard, level surface.
2. Stop the engine, remove key, wait for moving parts to stop.
3. Place mower deck in LOWEST setting.
4. Engage PTO drive lever.



5. Measure distance from bracket (A) to washer (B) on tension rod (C). Distance (D) should be: 20 – 25 mm (0.78 – 0.98 in).
6. If adjustment is required, continue with Step 7.
7. DISENGAGE PTO lever.
8. Remove spring locking pin and washer (E) and disconnect tension rod from blade drive arm.
9. Loosen lock nut (F).
10. Turn fitting on tension rod clockwise to shorten and counterclockwise to lengthen effective rod length.
11. Tighten lock nut (F) to 27 N•m (20 lb-ft.).
12. Assemble tension rod and recheck dimension (D).
13. Check brake clearance. (See Adjusting Spindle Brake in this section.)

Adjusting Spindle Brake



CAUTION: Avoid injury! Rotating blades are dangerous. Mower blades must stop within 5 seconds after mower is turned off. Check spindle brake measurement every 25 hours or once a year (whichever comes first).

IMPORTANT: Avoid damage! Avoid belt damage.

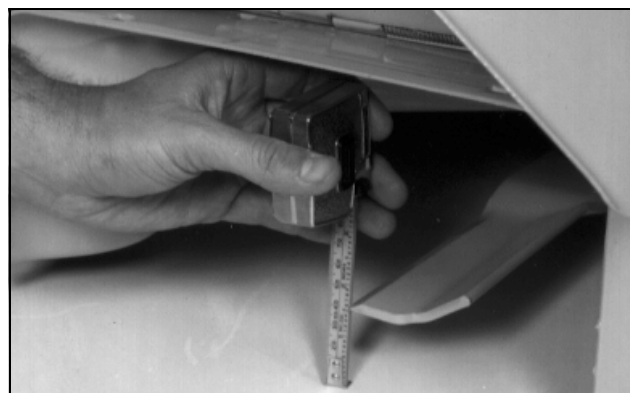
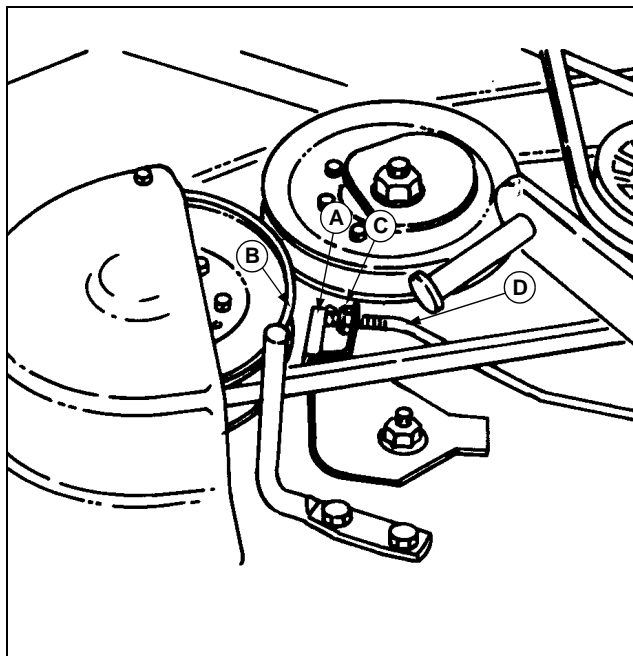
Spindle brake engagement must be checked and corrected every time the mower belt tension is adjusted.

Mower belt tension should be adjusted, if required, BEFORE brakes are adjusted.

1. Park tractor on a hard, level surface.
2. Stop the engine, remove key, wait for moving parts to stop.
3. Place mower deck in LOWEST setting.
4. Engage PTO drive lever.
5. Check mower belt tension. (See Adjusting Mower Belt Tension in this section.)
6. Remove belt guard.

SERVICE MOWER

IMPORTANT: Avoid damage! ALL brakes MUST be adjusted. There are TWO spindle brakes on the 38 and 42-Inch decks, and THREE spindle brakes on the 46-Inch deck.



1. Lower mower. Measure distance between blade tip and flat ground surface.
2. Turn blade 180 degrees. Measure distance between blades other tip and flat ground surface.
3. If the distance between the two measurements is more than 3 mm (1/8 in), install new blade.

Servicing Mower Blades

46-Inch Mower Deck



CAUTION: Avoid injury! Be careful, sharp edges on mower blades. Always wear gloves when handling mower blades.

7. Measure distance from brake surface (A) to pulley braking surface (B). Brake to Pulley Distance should be: 2 – 3 mm (0.08 – 0.12 in).
8. If adjustment is required, turn nut (C) on end of brake rod (D) in correct direction to set brake at proper distance from pulley.
9. Repeat on all brakes.
10. Install belt guard.

Checking Mower Blades

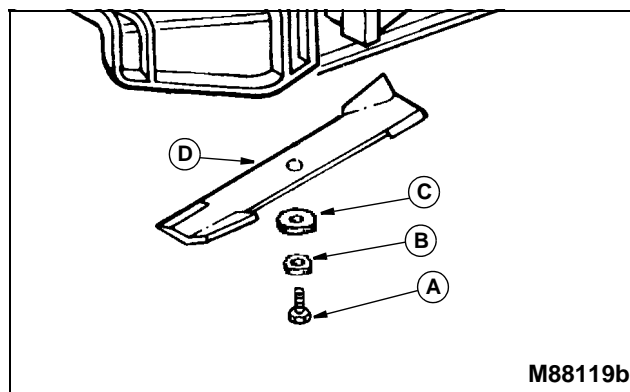


CAUTION: Avoid injury! Before adjusting Mower Belt Tension: STOP engine. Remove key. Wait for all moving parts to STOP.

To check for a bent blade:

REMOVING MOWER BLADES

1. Raise mower deck to gain access to mower blades. If necessary, remove mower deck.
2. Using a wooden block, prevent mower blades from spinning.



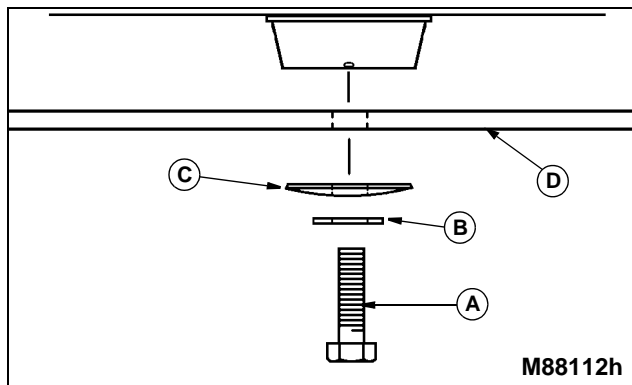
M88119b

3. Loosen and remove cap screw (A), hardened washer (B), cupped blade washer (C) and blade (D).
4. Inspect blades; sharpen/balance or replace as necessary.

SERVICE MOWER

INSTALLING MOWER BLADES

1. Lightly lubricate cap screw threads with a general purpose grease or oil. This lubrication is to prevent rusting and seizing.



2. Position mower blade (D) with the cutting edge towards the ground onto the mower spindle.

3. Install cupped blade washer (C) with cup side toward the blade.

4. Install hardened washer (B).

5. Install and tighten cap screw (A) by hand until mower blade is in full contact (fully seated) with spindle.

6. With mower blade blocked, to prevent spinning, tighten cap screws to 56 N•m (41 lb-ft.).

42-Inch Mower Deck



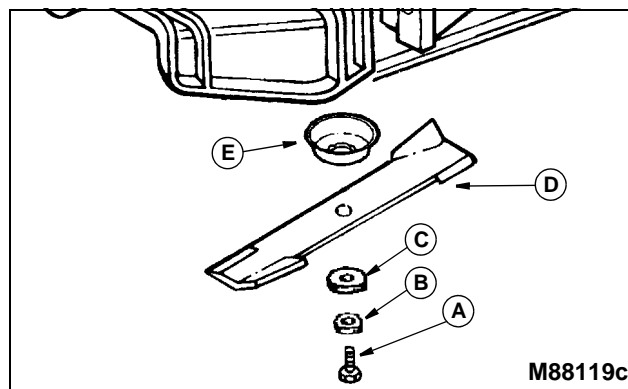
CAUTION: Avoid injury! Be careful, sharp edges on mower blades. Always wear gloves when handling mower blades.

REMOVING MOWER BLADES

1. Raise mower deck to gain access to mower blades. If necessary, remove mower deck.

2. Using a wooden block, prevent mower blades from spinning.

NOTE: Before removing hardware, note the orientation of the cupped blade washer (C) to ensure proper installation.

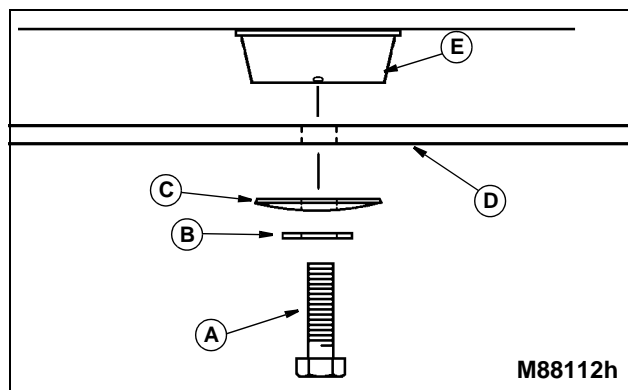


3. Loosen and remove cap screw (A), hardened washer (B), cupped blade washer (C), blade (D) and deflector cup (E).

4. Inspect blades; sharpen/balance or replace as necessary.

INSTALLING MOWER BLADES

1. Lightly lubricate cap screw threads with a general purpose grease or oil. This lubrication is to prevent rusting and seizing.



2. Install deflector cup (E) on spindle.

3. Position mower blade (D) with the cutting edge towards the ground onto the mower spindle.

4. Install cupped blade washer (C) with CUPPED SIDE toward the blade.

5. Install hardened washer (B).

6. Install and tighten cap screw (A) by hand until mower blade is in full contact (fully seated) with spindle.

7. With mower blade blocked, to prevent spinning, tighten bolt to 56 N•m (41 lb-ft.).

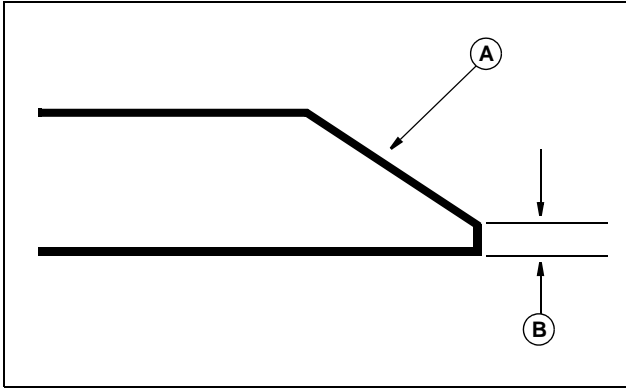
SERVICE MOWER

Sharpening Blades



CAUTION: Avoid injury! Wear goggles and gloves when you handle blades.

1. Sharpen blades with grinder, hand file or electric blade sharpener.



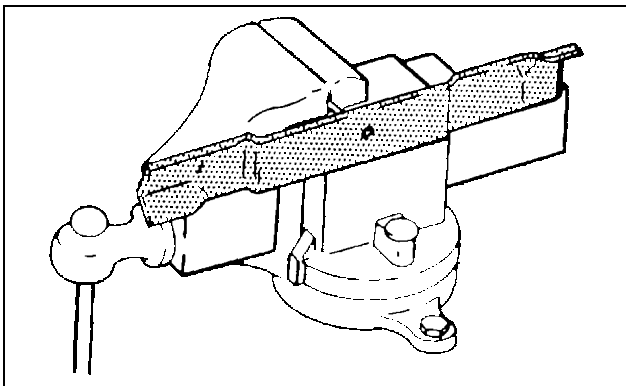
2. Keep original bevel (A) when you grind.
3. Blade should have 0.40 mm (1/64 in.) cutting edge (B).

Balancing Blades



CAUTION: Avoid injury! Wear goggles and gloves when you handle blades.

1. Clean blade.
2. Put blade on nail in vise or on vertical wall stud. Turn blade to horizontal position.



3. If blade is not balanced, heavy end of blade will drop.
4. Grind bevel of heavy end. Do not change bevel.

SERVICE ELECTRICAL

Checking the Battery

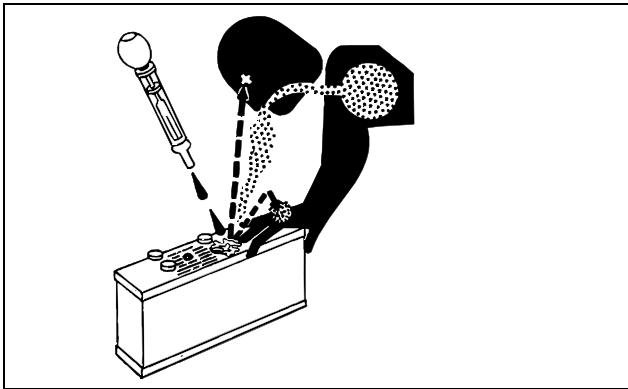


CAUTION: Avoid injury! Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes. Wear eye protection and avoid spilling or dripping electrolyte.

Flush eyes with water for 15-30 minutes if acid is splashed into eyes.

If acid is swallowed, get medical attention immediately.

DO NOT attempt to open, add fluid or service battery. Any attempt to do so will void warranty and lead to possible injury.



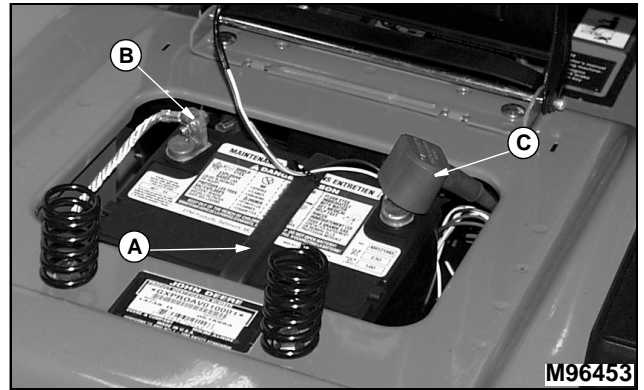
- Keep battery and terminals clean.
- Keep battery bolts tight.
- Keep small vent holes open.
- Recharge, if necessary, at 6–10 amperes for 1 hour. (See Charging the Battery in this section.)

Removing and Installing the Battery



CAUTION: Avoid injury! Always remove negative (–) battery cable first, and install it last, to prevent electrical short circuit to chassis.

1. Turn ignition key off and raise seat.



2. Remove rubber hold-down strap (A).
3. Disconnect negative (–) battery cable (B).
4. Remove red cover (C) from positive (+) battery terminal. Remove positive (+) cable from battery.
5. Remove battery.
6. Install the battery following these steps in reverse order. (See Connect the Battery in the Assembly section.)

Clean Battery and Terminals

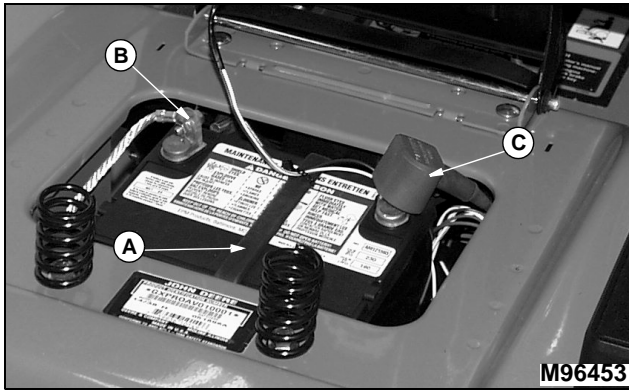


CAUTION: Avoid injury! Battery gas can explode, to avoid injury:

- Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.
- Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.
- Always remove grounded (–) battery clamp first and replace it last.

1. Turn ignition key off and raise seat.

SERVICE ELECTRICAL



2. Remove rubber hold-down strap (A).
3. Disconnect BLACK (-) battery cable (B) first.
4. Disconnect RED (+) battery cable (C). Remove battery from mower.
5. Wash battery with solution of four tablespoons of baking soda to one gallon of water. Be careful not to get the soda solution into the cells.
6. Rinse the battery with clean water. Let dry.
7. Clean terminals and battery cable ends with wire brush until bright.
8. Apply petroleum jelly or silicone spray to terminal to prevent corrosion.
9. Install battery. (See Removing and Installing the Battery in this section and Connect the Battery in the Assembly section.)

Charging the Battery



CAUTION: Avoid injury! BE VERY CAREFUL: Battery fluid (electrolyte), is a solution of water and sulfuric acid. It is very harmful to eyes, skin, or clothing.

- Wear goggles or an eye shield when you work with a battery.
 - If the acid contacts your eyes, skin, or clothing, flush the area immediately with water. Get medical help, if necessary.
- A battery gives off gas which can explode. An exploding battery will spray sulfuric acid in all directions.
- Keep cigarettes, sparks, and flames away from the battery.
 - Charge the battery in an area with good ventilation.
 - **DO NOT** charge a frozen battery.

Before you charge a battery:

- Wait until the battery has warmed to room temperature. Do not charge a frozen battery.

Turn OFF and unplug the charger before you connect cables to the battery or disconnect cables from the battery.

If the battery becomes warm to touch during charging:

- Reduce the charging rate OR
- Stop charging the battery until it cools.

NOTE: Your charger may have an AUTOMATIC STOP to prevent charging the battery:

- When the battery is fully charged OR
- When the battery is not in condition to take a charge.

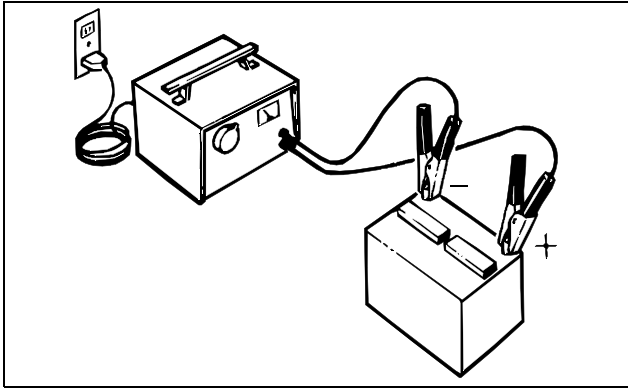


CAUTION: Avoid injury! DO NOT attempt to open, add fluid or service battery. Any attempt to do so will void warranty and lead to possible injury. Battery gas is explosive:

- **DO NOT** smoke while you charge battery.
- Keep all flames and sparks away.
- **DO NOT** charge frozen battery.
- **DO NOT** connect booster battery negative (-) cable to starting vehicle negative (-) terminal.

1. Remove battery from mower. (See Removing and Installing Battery in this section.)

SERVICE ELECTRICAL



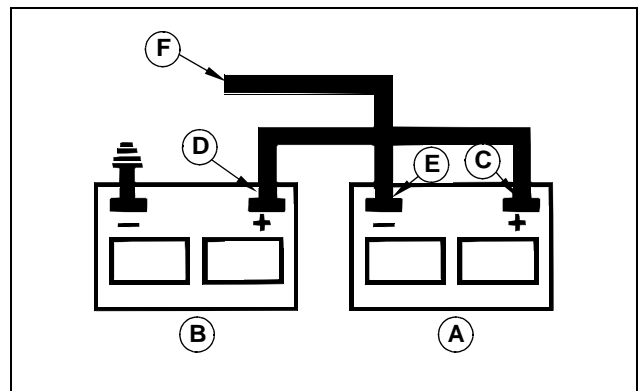
2. Connect positive (+) charger cable to positive (+) battery terminal.
3. Connect negative (-) charger cable to negative (-) battery terminal.
4. Plug in charger cord.
5. Charge battery using a 12 Volt battery charger at a rate of 6–10 amperes for a minimum of 1 hour and no more than 2 hours.
6. Unplug charger cord. Remove charger cables.
7. Install battery. (See Removing and Installing Battery in this section.)

Using Booster Battery



CAUTION: Avoid injury! The battery produces a flammable and explosive gas. The battery may explode:

- **DO NOT** attempt to jump start a frozen battery. Warm to 16 degrees C (60 degrees F).
- **DO NOT** smoke near battery.
- **Wear eye protection and gloves.**
- **Keep sparks and flames away.**
- **DO NOT** connect the negative (-) booster cable to the negative (-) terminal of the discharged battery. Connect at a good ground location away from the discharged battery.



A - Booster Battery

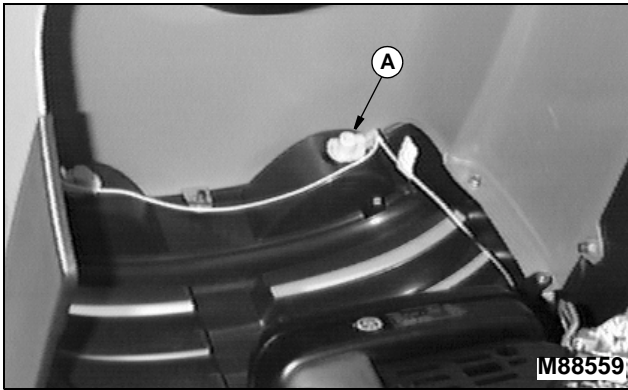
B - Disabled Vehicle Battery

1. Connect positive (+) booster cable to booster battery (A) positive (+) post (C).
2. Connect the other end of positive (+) booster cable to the disabled vehicle battery (B) positive (+) post (D).
3. Connect negative (-) booster cable to booster battery negative (-) post (E).
4. Connect the other end (F) of negative (-) booster cable to a metal part of the disabled machine frame away from battery.
5. Start the engine of the disabled machine and run machine for several minutes.
6. Carefully disconnect the booster cables in the exact reverse order: negative cable first and then the positive cable.

Replacing Headlight Bulb

1. Lift hood.

SERVICE ELECTRICAL



2. Push in and turn bulb socket (A) 1/4 turn counterclockwise to remove.
3. Replace defective bulb with a new bulb.
4. Insert bulb socket into housing, push in and turn 1/4 turn clockwise to install.
5. Lower hood.

Replacing Fuse

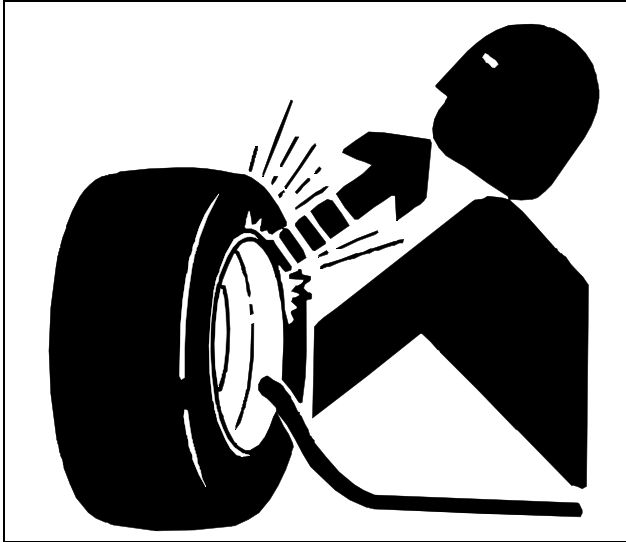
1. Open hood.



2. Pull defective fuse (A) out of socket.
3. Check metal clip in fuse window and discard fuse if clip is broken.
4. Push new fuse into socket.
5. Close hood.

SERVICE MISCELLANEOUS

Checking Tire Pressure



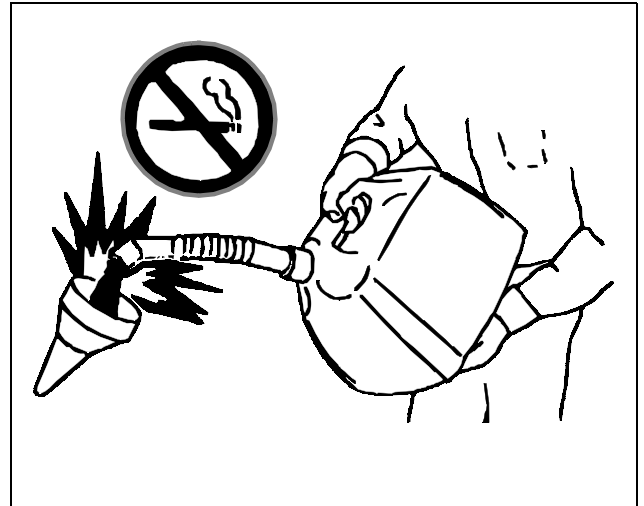
CAUTION: Avoid injury! Explosive separation of a tire and rim parts can cause serious injury or death:

- Do not attempt to mount a tire without the proper equipment and experience to perform the job.
- Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.
- When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly.
- Check tires for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.

1. Check tires for damage.
2. Check tire pressure with an accurate gauge.
3. Add or remove air, if necessary:

Tire Size	Pressure-kPa (psi)
Front: 15-Inch	97 kPa (14 psi)
Rear: 20-Inch	69 kPa (10 psi)

Fuel



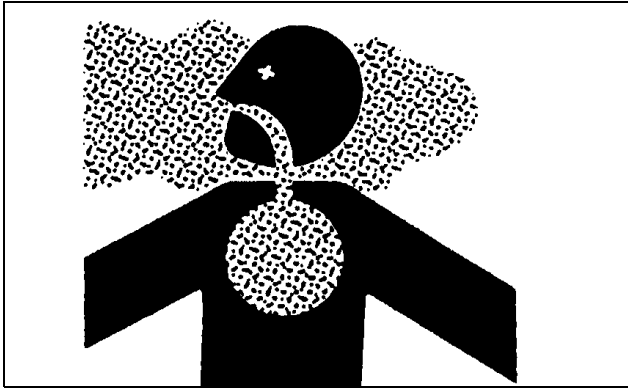
CAUTION: Avoid injury! Handle fuel with care, it is highly flammable and can cause serious injury or death:

- DO NOT refuel machine while you smoke, when machine is near an open flame or sparks, or when engine is running. STOP engine.
- Fill fuel tank outdoors.
- Prevent fires: clean oil, grease and dirt from machine. Clean up spilled fuel immediately.
- Do not store machine with fuel in tank in a building where fumes may reach an open flame or spark.
- To prevent fire and explosion caused by static electric discharge, while you fill tank, use a non-metal fuel container. If you use a funnel, MAKE SURE IT IS PLASTIC. Avoid using a funnel which has a metal screen or filter.
- Use only clean approved containers and funnels.
- Store oil and fuel in an area protected from dust, moisture and other contamination.
- DO NOT use METHANOL gasoline. METHANOL is harmful to the environment and to your health.

IMPORTANT: Avoid damage! Avoid spilling fuel. Fuel can damage plastic and painted surfaces.

DO NOT mix oil with gasoline. Unleaded gasoline with an octane rating of 87 or higher is recommended.

SERVICE MISCELLANEOUS



Using Clean Fuels

Dirt in the fuel system is a major cause of performance problems. Be sure to clean any grass or trash from the top of the tank before removing lid. Use of a PLASTIC funnel with a plastic mesh strainer when filling the tank will prevent most foreign material from entering the tank.

Octane Rating

Regular grade 87 octane unleaded fuel is recommended for use in your tractor. Higher octane fuels will seldom make your tractor perform better. If your tractor develops a starting or performance problem immediately after use of new fuel, change supplier or fuel brand. If the problem still exists after switching fuel, see your John Deere dealer for service.

Fuel Blends

Fuels are blended to give peak performance during cold weather and warm weather. For cold weather, gasoline is specially blended to provide better starting capabilities. However, avoid prolonged storage of cold-weather blended fuel because it will evaporate more quickly. You may experience longer cranking times in cold weather with "old" fuel. Buy smaller amounts of cold-weather blended fuel in winter.

Fuels used during the summer are not required to provide improved starting properties so they are blended differently. As a result, you may experience hard starting or other performance problems during cold weather if you use fuel remaining from summer uses.

Oxygenated or Reformulated Fuels

Many areas are now required to add "oxygenates" (either alcohol or ether) which blend oxygen into the fuel to help reduce exhaust emissions. If you use oxygenated fuel be sure it is unleaded and meets the minimum octane rating requirement. DO NOT use fuel that contains methanol to avoid producing excess emissions.

Although fuels blended with alcohol or ether allow your engine to run cleaner, they may contribute to fuel system damage and performance problems by causing gum and

varnish deposits, especially if fuel is stored for several weeks or more.

Using clean, fresh fuel will help to prevent damage to the fuel system and will help maintain peak engine performance. If engine performance problems occur, use fuel from another supplier before suspecting machine problems. Suppliers blend fuels differently and changing suppliers will generally solve any performance problems.

Using Fresh Fuel and Stabilizers

The best thing you can do to ensure peak performance of your engine is to use "fresh" fuel. Your tractor's engine will perform well with most good-quality fresh fuels regardless of additives. Any fuel will begin to deteriorate and evaporate over time and begin to form gum and varnish deposits in the fuel system. Help to avoid this by buying only enough fuel to last approximately 30 days or add fuel stabilizer immediately.

Adding a fuel stabilizer to the fuel system is recommended any time the tractor will not be operated for more than 60 days. Varnish deposits may build up in the carburetor in as little as a few weeks by using stale, oxygenated fuel.

No stabilizer will work with "stale" fuel, any fuel that is more than 30 days old. (See Preparing Your Engine For Storage in this section for information on adding stabilizer to the fuel.)

Filling Fuel Tank

IMPORTANT: Avoid damage! Dirt and water in fuel are major causes of engine performance problems. Prevent dirt and debris from entering the fuel tank when filling.

Fill the tank at the end of each day's operation to help keep condensation out of the fuel tank.

Fuel tank capacity: 4.7 L (1.25 gal).

1. STOP engine. If engine is hot let it cool several minutes before you add fuel.
2. Lift hood.
3. Remove grass clippings and other trash from tank area.

SERVICE MISCELLANEOUS



4. Remove fuel tank cap (A).
5. Fill tank with fresh fuel only to bottom of filler neck.
6. Install fuel tank cap and lower hood.

Care for Plastic and Painted Surfaces

PLASTIC SURFACES

The plastic parts on your tractor are made of a blend of polycarbonate and polyester materials. These parts are extremely strong and durable. Unlike painted metal, the plastic parts will never dent or rust. If the plastic parts get scratched, the color will remain the same since the color goes through the entire part.

IMPORTANT: Avoid damage! “Dry wiping” or wiping the plastic surface when it is dry will result in minor surface scratches. Always wet the surface before cleaning. Follow correct cleaning and waxing procedures.

Correct Cleaning Care:

NOTE: Follow cleaning procedure every time plastic surfaces are cleaned. DO NOT wipe dry plastic surface with hand or towel.

1. Before washing, rinse hood and entire machine with clean water to remove dirt and dust that may scratch the surface.
2. Wash plastic surface with clean water and a mild liquid automotive washing soap. Use a SOFT, CLEAN cloth (bath towel or automotive mitt) when washing.
3. Dry thoroughly with a SOFT, CLEAN cloth (diaper or bath towel).
4. Wax the surface with a liquid automotive wax. Use products that specifically say “contains no abrasives”.
5. Remove applied wax by hand using a clean, soft cloth.

Avoid Damage:

- “Dry wiping” or wiping the plastic surface when it is dry is a major source of minor surface scratches.
- DO NOT wipe hood or other plastic parts unless wetted first.
- DO NOT apply wax unless plastic surface has been thoroughly cleaned first.
- DO NOT use abrasive materials, such as polishing compounds, to clean or to wax plastic surface.
- DO NOT wax plastic surfaces without drying first. Hard-to-remove water spots will be left.
- DO NOT use solvents or commercial cleaners.
- DO NOT use power buffers to remove wax.
- DO NOT spray insect repellent near machine. Insect repellent spray may damage plastic or painted surfaces.
- Be careful not to spill fuel on any plastic or painted surfaces. Wipe up fuel immediately.

Repair:

- Your John Deere dealer has the professional materials needed to properly remove surface scratches from any plastic surfaces.
- DO NOT attempt to paint over marks or scratches in plastic parts.
- DO NOT use polishing compounds to attempt to remove scratches.

PAINTED METAL SURFACES

Correct Cleaning Care:

Follow automotive practices to care for your tractor painted metal surfaces. Use a high-quality automotive wax regularly to maintain the factory look of your tractor’s painted surfaces.

Repair:

Minor Scratches (surface scratch):

1. Clean area thoroughly to be repaired.
2. Use automotive polishing compound to remove surface scratches.
 - DO NOT use rubbing compound to avoid removing paint.
3. Apply wax to entire surface.

Deep Scratches (bare metal or primer showing):

1. Clean area to be repaired with rubbing alcohol or mineral spirits.

SERVICE MISCELLANEOUS

2. Use paint stick with factory-matched colors available from your John Deere dealer to fill scratches. Follow directions for use and for drying.
 - Apply sparingly to scratch without getting on surrounding painted surface. Fill in scratch to level of surrounding painted area.
 - Allow to dry 48 hours in warm weather and up to 30 days in colder temperatures.
3. Use automotive polishing compound to smooth out surface. Do not use power buffer.
4. Apply wax to surface.

REMOVING MOWER

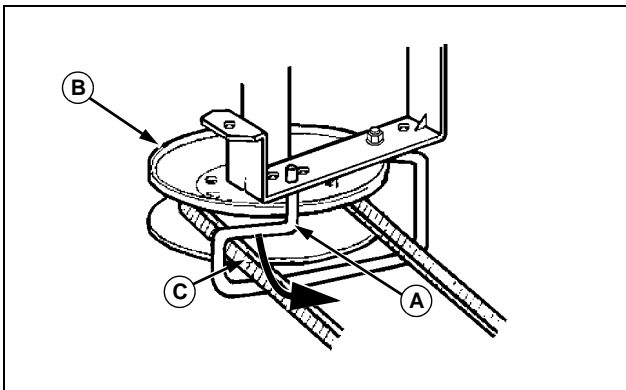
Removing Mower



CAUTION: Avoid injury! Before removing mower on machine: STOP engine. Remove key. Wait for all moving parts to STOP.

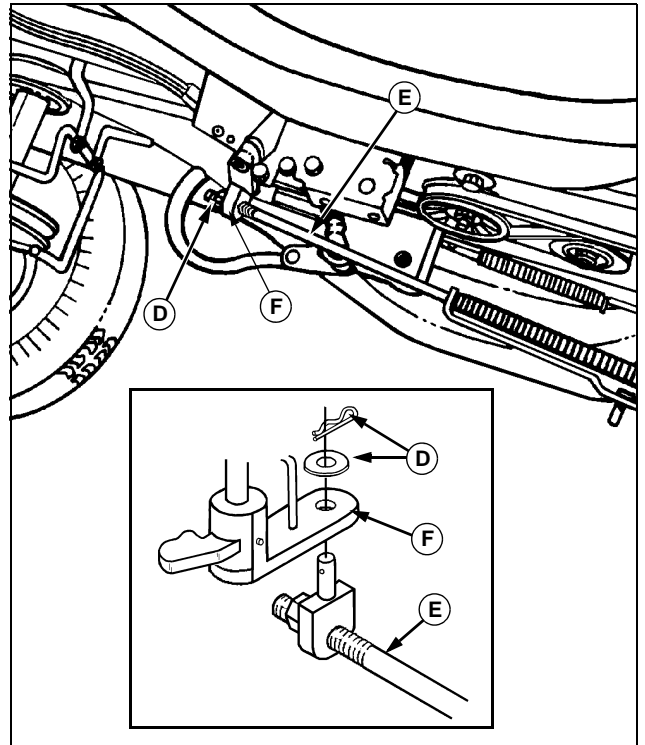
- Mower lift lever under tension. To avoid injury, grasp lift lever securely and release lock slowly.

1. STOP engine, LOCK park brake, DISENGAGE PTO lever, turn key to the OFF position, and remove key.
2. Raise mower lift lever to highest position.
3. Put wood blocks under each side of mower.
4. Lower mower lift lever to lowest position, bringing deck down onto blocks.

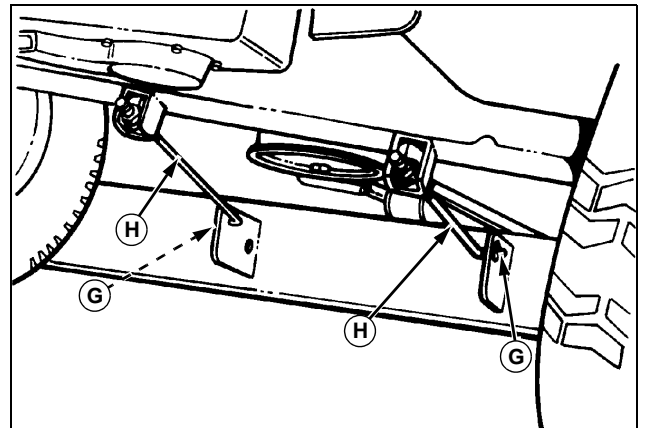


Picture Note: Shown from behind L.H. front wheel.

5. Remove mower deck drive belt from tractor engine pulley:
 - a. Pull down on left-hand side of belt guide (A) and rotate away from engine pulley (B).
 - b. Remove belt (C) from belt guide and pulley.
 - c. Return guide to original position. Insure that the guide is seated into the hole.

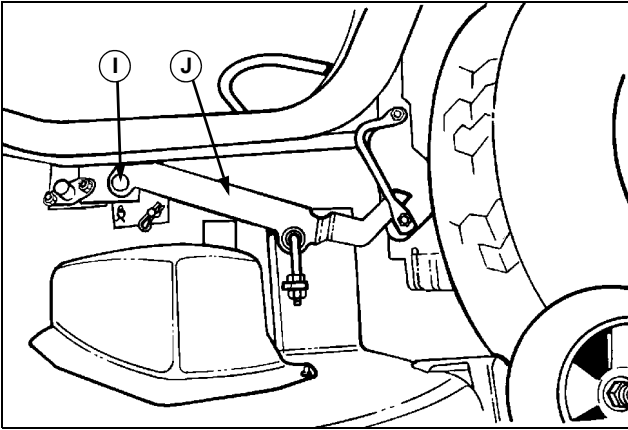


6. Remove spring locking pin and washer (D) holding tension rod (E) to blade drive arm (F).



7. Remove spring locking pins and washers (G) from front draft rods (H) and remove draft arms from front axle brackets. Store draft arms with mower.

REMOVING MOWER



8. Remove spring locking pins and rear draft pins (I), one on each side, from rear draft brackets (J).
9. Raise mower deck lift lever to highest position and remove wood blocks.
10. Pull deck out from under tractor.

INSTALLING MOWER

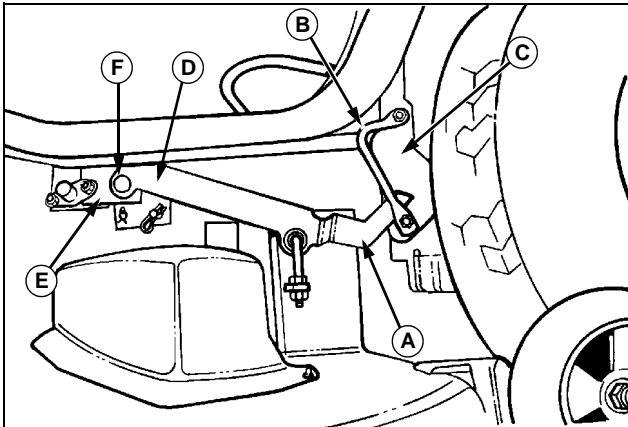
Installing Mower



CAUTION: Avoid injury! Before installing mower on machine: STOP engine. Remove key. Wait for all moving parts to STOP.

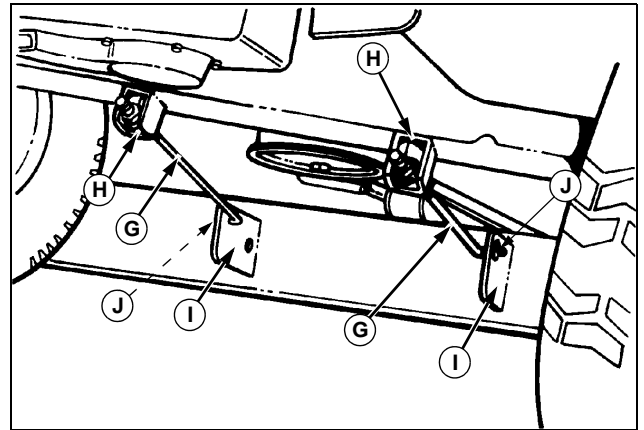
- Mower blades are sharp. To avoid injury, always wear gloves when handling mower deck.
- Mower lift lever under tension. To avoid injury, grasp lift lever securely and release lock slowly.

1. STOP engine, LOCK park brake, DISENGAGE PTO lever, turn key to the OFF position, and remove key.
2. Raise mower deck lift lever to the UPPER position.
3. Turn steering wheel fully to the left. Carefully slide the mower deck under the right side of the tractor (with the mower discharge to tractors right side) taking care to avoid interference of the rear draft arms with the underside of the tractor.
4. Lower mower lift lever to the LOWEST position.



Picture Note: Left side of tractor shown.

5. Position the deck so the rear draft arms (A) are between the guide rods (B) and the lift arms (C).
6. Lift the mower deck. Place wood blocks under each side of mower deck and align the holes in the front of the rear draft brackets (D) with the holes in the frame bracket (E).
7. Insert rear draft pins (F) through rear draft arms and frame bracket from the outboard side. Secure with spring locking pins.

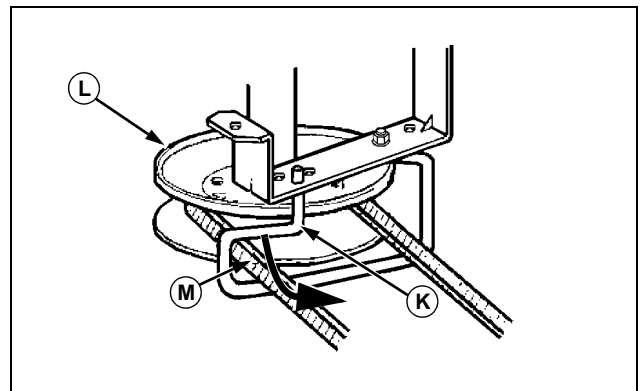


Picture Note: Front of left hand front wheel shown.

8. Insert angled end of front draft rod assemblies (G) through holes in front axle brackets (H).

NOTE: The draft rod assemblies are inserted from the inside of the mower deck brackets toward the outside of the bracket.

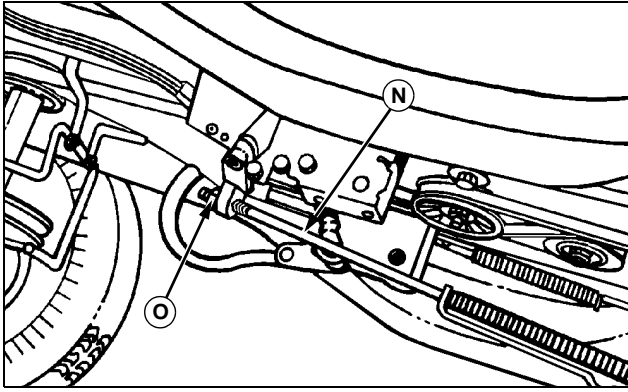
9. Raise front of deck and block. Insert angled end of front draft rods into forward holes on the front brackets (I) of the mower deck.
10. Secure each draft rod with flat washer and spring locking pin (J).



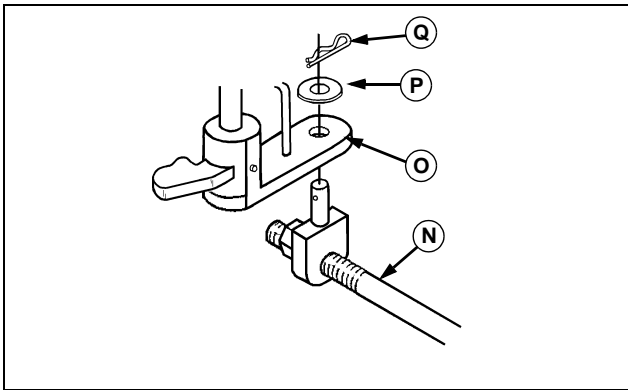
Picture Note: Shown from behind L.H. front wheel.

11. Pull down on left-hand side of belt guide (K) and rotate away from engine pulley (L). Install belt (M) through belt guide and onto pulley. Return guide to original position. Insure that the guide is seated into the hole.

INSTALLING MOWER



12. Raise tension rod (N) and attach to blade drive arm (O) using flat washer (P) and spring locking pin (Q).



13. Raise deck by pressing the lift lever lock and pulling the mower deck lift lever to its highest point.

14. Remove wood blocks from under deck.

15. Check for proper routing and position of all belts.

16. Level mower. (See Adjusting Mower Level (Side-to-Side and Front-to-Rear) in the Operating Mower section.)

17. Adjust gage wheels. (See Adjusting Mower Gage Wheels in the Operating Mower section.)

TROUBLESHOOTING

Using Troubleshooting Chart

If you are experiencing a problem that is not listed in this chart, see your Authorized Service Center for service.

When you have checked all the possible causes listed and you are still experiencing the problem, see your Authorized Service Center.

Engine

IF	CHECK
Engine will not start	Out of fuel. Loose or corroded electrical connections. PTO drive lever is in ON position. Fuse is blown. Spark plug wire is loose or disconnected. Brake switch not engaged. Engine flooded. Dirty air filter. Dirty fuel filter. Water in fuel. Bad starter solenoid. Carburetor out of adjustment. Engine valves out of adjustment.
Engine clicks but will not start	Weak or dead battery. Corroded battery terminals. Loose or damaged wiring. Faulty solenoid or starter.
Engine Hard To Start	Dirty air filter. Bad spark plug. Weak or dead battery. Dirty fuel filter. Stale or dirty fuel. Loose or damaged wiring. Carburetor out of adjustment. Engine valves out of adjustment. Below 32°F (0°C)

TROUBLESHOOTING

IF	CHECK
Loss of power	<p>Cutting too much grass /too fast.</p> <p>Throttle in "CHOKE" position.</p> <p>Buildup of grass, leaves and trash under mower.</p> <p>Dirty air filter.</p> <p>Low oil/dirty oil.</p> <p>Faulty spark plug.</p> <p>Dirty fuel filter.</p> <p>Stale or dirty fuel.</p> <p>Water in fuel.</p> <p>Spark plug wire loose.</p> <p>Dirty engine air screen/fins.</p> <p>Dirty/clogged muffler.</p> <p>Loose or damaged wiring.</p> <p>Carburetor out of adjustment.</p>
Engine continues to run when operator leaves seat	Faulty operator presence safety switch.
Engine Backfires When Turning Engine "OFF"	Engine throttle control not set at "SLOW" position for 30 seconds before stopping engine.
Engine will not turn over	<p>Clutch/brake pedal not depressed.</p> <p>Attachment clutch is engaged.</p> <p>Weak or dead battery.</p> <p>Blown fuse.</p> <p>Corroded battery terminals.</p> <p>Loose or damaged wiring.</p> <p>Faulty ignition switch.</p> <p>Faulty solenoid or starter.</p> <p>Faulty operator presence safety switch.</p>
Engine Stops When Shift Lever Is Moved Rearward and Mower Is Engaged (Hydrostatic)	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)
Engine Stops When Gear Shift Lever Is Moved To The R (REVERSE) Position and Attachment Is Engaged (Gear)	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)

TROUBLESHOOTING

Mower

IF	CHECK
Mower blades will not rotate	Obstruction in clutch mechanism, or blades. Worn/damaged mower drive belt. Frozen idler pulley. Frozen blade mandrel.
Discharge Chute Plugging	Belt worn or installed incorrectly. Grass too wet. Buildup of grass, leaves and trash under mower. Worn, bent or loose blade. Mower deck not level. Engine rpm too low. Travel speed too fast. Low/uneven tire pressure. Blades improperly installed. Improper blades used.
Patches Of Grass Uncut	Travel speed too fast. Engine rpm too low.
Belt Slipping	Debris in sheaves. Worn belt.
Too Much Vibration	Worn, bent or loose blade(s). Bent blade spindle. Damaged drive belt.
Blades Scalping Grass	Cutting too low. Turning speed too fast. Ridges in terrain. Rough or uneven terrain. Low tire pressure. Mower gauge wheels not adjusted correctly. Bent blade(s).
Uneven Cut	Mower not level. Travel speed too fast. Blades dull, bent or loose. Mower gauge wheels not adjusted correctly. Buildup of grass, leaves, and trash under mower. Bent blade spindle.

TROUBLESHOOTING

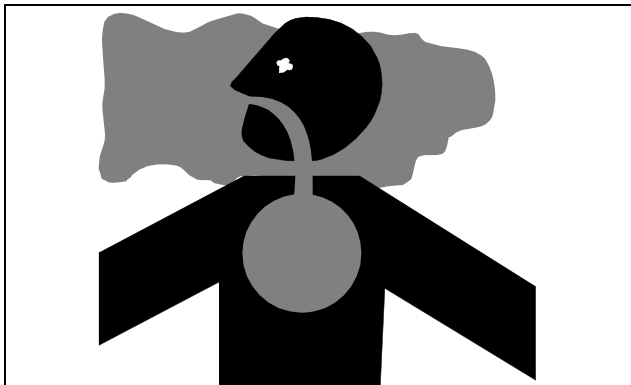
IF	CHECK
Grass Tips Are Jagged And Turn Grayish Brown After Mowing	Dull mower blades. Bent blades. Front-to-rear blade adjustment not set properly.
Mower Stops When Shift Lever Is Moved Rearward and Mower Is Engaged (Hydrostatic)	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)
Mower Stops When Gear Shift Lever Is Moved To The R (REVERSE) Position and Mower Is Engaged (Gear)	Normal condition. (See Using Reverse Implement Option in the OPERATING section.)

Electrical

IF	CHECK
Headlight not working	Bulb(s) burned out. Loose or damaged wiring. Blown fuse.
Battery will not charge	Bad battery cell(s). Poor cable connections. Faulty regulator/rectifier.

STORING MACHINE

Storing Safely



CAUTION: Avoid injury! Engine exhaust fumes can cause sickness or death.

- If it is necessary to run an engine in an enclosed area, use an exhaust pipe extension to remove the fumes.
- Always try to work in a well ventilated area.
- DO NOT store vehicle with fuel in the tank inside a building where fumes may reach an open flame or spark.
- Allow engine to cool before storing in an enclosure.
- Remove the battery and store it in a cool dry place where it will not freeze, and where children cannot reach it.

Preparing Machine for Storage

1. Repair any worn or damaged parts. Replace parts if necessary. Tighten loose hardware.
2. Clean under the deck.
3. Paint scratched or chipped metal surfaces to prevent rust.
4. Wash the machine and apply wax to metal and plastic surfaces. (See SERVICE-MISCELLANEOUS section for care of plastic and metal surfaces.)
5. Run machine for five minutes to dry belts and pulleys.
6. Apply light coat of engine oil to pivot and wear points to prevent rust.
7. Lubricate grease points.
8. Make sure tires are properly inflated.

Preparing Engine For Storage

NOTE: Properly preparing your tractor engine for storage will make it easier to start the following season. Engine storage procedure should be used if vehicle is not used for longer than 60 days.

There are two satisfactory methods of preparing the engine for storage: running the engine completely dry of fuel, or filling the fuel tank with a mixture of fresh fuel and fuel stabilizer.

Running engine dry of fuel:

NOTE: Try to anticipate the last time the tractor will be used for the season so very little fuel is left in the fuel tank.

1. Park tractor in a well-ventilated area.
2. Engage park brake and disengage PTO.
3. Turn on engine and allow to run until it runs out of fuel.
4. Turn key to OFF position.
5. Continue with Preparing Engine.

Add fuel and stabilizer mixture to tank:

1. Park tractor in a well-ventilated area.

IMPORTANT: Avoid damage! Be sure fuel is fresh when adding fuel stabilizer. Fuel stabilizers are ineffective when added to fuels that are more than 30 days old.

2. Mix fresh fuel and fuel stabilizer in separate container. Follow stabilizer instructions for mixing.

NOTE: Filling the fuel tank reduces the amount of air in the fuel tank and helps reduce deterioration of fuel.

3. Fill fuel tank with stabilized fuel.
4. Run engine for a few minutes to allow fuel mixture to circulate through carburetor.
5. Continue with Preparing Engine.

Preparing Engine

1. Change engine oil and filter while engine is warm.
2. Service air filter if necessary.
3. Clean debris from engine air intake screen.
4. Remove spark plugs. Put 30 mL (1 oz.) of clean engine oil in cylinders.
5. Install spark plugs, but DO NOT connect spark plug wires.
6. Crank the engine for approximately five seconds to allow oil to be distributed.

STORING MACHINE

7. Clean the engine and engine compartment.
8. Remove battery.
9. Clean the battery and battery posts.

NOTE: The stored battery should be recharged every 90 days.

10. Charge the battery. (See Charging Battery in the SERVICE - ELECTRICAL section.)
11. Store the battery in a cool, dry place where it will not freeze.
12. Store the vehicle in a dry, protected place. If vehicle is stored outside, put a waterproof cover over it.

Removing Machine From Storage

1. Check tire pressure. (See Checking Tire Pressure in Service - Miscellaneous section.)
2. Fill fuel tank. Check engine oil level.
3. Take machine off of blocks or support stands.
4. Charge battery if necessary. Install battery. (See Removing and Installing the Battery in the SERVICE-ELECTRICAL section.)
5. Check spark plug gap. Install and tighten spark plug(S) to 20 N•m (15 lb-ft.).
6. Lubricate all grease points.
7. Check automatic transmission oil level.
8. Run the engine 5 minutes without the mower or any attachments running to allow oil to be distributed throughout engine.
9. Be sure all shields and guards are in place.

SPECIFICATIONS

Model S1642

Engine Manufacturer	Kohler
Horsepower	11.9 kW (16 hp)
Displacement	426 cc (26 cu.in.)
Crankcase Capacity (Without Filter)	1.8 L (1 3/4 qt.)
Crankcase Capacity (With Filter)	1.9 L (2 qt.)
Spark Plug-Gap	1.02 mm (0.040 in.)
Cylinders	One
Oil Filter	None
Air Filter	Paper with Foam
Transmission	Hydrostatic
Transaxle Manufacturer	Tuff Torq™ K51
Travel Speed - Forward	0 - 8.5 km/h (0 - 5.3 mph)
Travel Speed - Reverse	0 - 4.7 km/h (0 - 2.9 mph)

Model S1742

Engine Manufacturer	Briggs & Stratton
Horsepower	12.7 kW (17 hp)
Displacement	465 cc (28.4 cu.in.)
Crankcase Capacity (Without Filter)	1.4 L (1 1/2 qt.)
Crankcase Capacity (With Filter)	1.7 L (1 3/4 qt.)
Spark Plug-Gap	0.76 mm (0.030 in.)
Cylinders	One
Oil Filter	Yes
Air Filter	Paper with Foam
Transmission	Gear Transaxle
Transaxle Manufacturer	Dana
Travel Speeds	5

Gear Speed Range

1st	2.4 km/h (1.5 mph)
2nd	3.2 km/h (2.0 mph)
3rd	5.0 km/h (3.1 mph)
4th	6.4 km/h (4.0 mph)
5th	8.0 km/h (5.0 mph)
Gear Speed - Reverse	3.7 km/h (2.3 mph)

Model S2046

Engine	Manufacturer Briggs & Stratton
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SPECIFICATIONS

Horsepower (SAE1349)	14.9 kW (20 hp)
Displacement	656 cc (40.0 cu.in.)
Crankcase Capacity (Without Filter)	1.8 L (1.75 qt.)
Crankcase Capacity (With Filter)	1.9 L (2 qt.)
Spark Plug-Gap	0.76 mm (0.030 in.)
Cylinders	Two
Oil Filter	Yes
Air Filter	Dry, Replaceable Foam
Transmission	Hydrostatic
Transaxle Manufacturer	Tuff Torq™ K51
Travel Speed - Forward	0 - 8.5 km/h (0 - 5.3 mph)
Travel Speed - Reverse	0 - 4.7 km/h (0 - 2.9 mph)

Electrical System (All Models)

Charging System	Dual Circuit AC/DC
Charging System Capacity	2-4 Amp
Battery Voltage	12 Volts
Battery Type	BCI Group U1
Battery CCA	190 Amp

Fuel (All Models)

Fuel Type	(See Fuel in the Service Miscellaneous section)
Fuel Tank Capacity	4.7 L (1.25 Gal)

Dimensions (All Models)

Height	98 cm (38.6 in)
Length (Overall)	152.4 cm (60 in)
Width - S1642 and S1742 (Overall)	91 cm (36 in)
Width - S2046 (Overall)	96.5 cm (38 in)
Weight: (
S1642 and S1742	176 kg (388 lb)
S2046	184 kg (406 lb)

Tires (All Models)

Size (Front)	15 x 6.50 - 6
Size (Rear)	20 x 10.0 - 8
Size (Rear)	20 x 8.0 - 8

SPECIFICATIONS

Tire Pressure (Front)	97 kPa (14 psi)
Tire Pressure (Rear)	69 kPa (10 psi)

Mower Deck (42-Inch)

Blades-Rotary	2
Blade Bolt Torque	56 N•m (41 lb-ft.)
Cutting Height-Approx.	25–102 mm (1–4 in.)
Cutting Width	1067 mm (42 in.)

Mower Deck (46-Inch)

Blades-Rotary	3
Blade Bolt Torque	56 N•m (41 lb-ft.)
Cutting Height-Approx.	25–102 mm (1–4 in.)
Cutting Width	1168 mm (46 in.)

Recommended Lubricants

Engine Oil	API Service Classification SG or SF
Grease	SAE Multi-Purpose EP Grease

(Specifications and design subject to change without notice.)

WARRANTY

LIMITED WARRANTY FOR NEW SCOTTS BRAND PRODUCTS

Manufactured by John Deere

(U.S. Only)

A. GENERAL PROVISIONS - The warranties described below are provided by John Deere Company ("John Deere") to the original purchasers of new Scotts Brand Products Manufactured by John Deere. Under these warranties, John Deere will repair or replace, at its option, any covered part which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by a dealer or service center authorized by John Deere to service the type of product involved, which will use only new or remanufactured parts or components furnished by John Deere. Warranty service will be performed without charge to the purchaser for parts or labor. The purchaser will be responsible, however, for any service call and/or transportation of product to and from the dealer's or service center's place of business, for any premium charged for overtime labor requested by the purchaser and for any service and/or maintenance not directly related to any defect covered under the warranties below.

B. WHAT IS WARRANTED - All parts of any new Scotts Brand Product Manufactured by John Deere, except batteries, are warranted for the number of months or operating hours specified below. Warranty statements required by law covering engine emission-related parts and components, are found in the Operator's Manual delivered with the machine.

EQUIPMENT USE	WARRANTY TERM
1) IN RESIDENTIAL (Private Homeowner) APPLICATION	24 Months
2) IN ANY OTHER APPLICATION	90 Days

Each warranty term begins on the date of product sale to the purchaser.

C. WHAT IS NOT WARRANTED - JOHN DEERE IS NOT RESPONSIBLE FOR THE FOLLOWING: (1) Used products; (2) Any product that has been altered or modified in ways not approved by John Deere; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage or accident; (4) Normal maintenance parts and service.

D. SECURING WARRANTY SERVICE - To secure warranty service, the purchaser must (1) report the product defect to an authorized dealer and request repair within the applicable warranty term, (2) present evidence of the warranty start date, and (3) make the product available to the dealer or service center within a reasonable period of time.

E. LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES - SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE - to the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations, or promises as to the quality, performance or freedom from defect of the Scotts Brand Products Manufactured by John Deere covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE PERIOD OF WARRANTY SET FORTH ON THIS PAGE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON THE SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE ARE THOSE SET FORTH ON THIS PAGE. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or

limitation of incidental or consequential damages so the above limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

F. NO DEALER WARRANTY - THE SELLING DEALER MAKES NO WARRANTY OF ITS OWN AND THE DEALER HAS NO AUTHORITY TO MAKE ANY REPRESENTATION OR PROMISE ON BEHALF OF JOHN DEERE, OR TO MODIFY THE TERMS OR LIMITATIONS OF THIS WARRANTY IN ANY WAY.

G. FAILURE DUE TO IMPROPER SET-UP IS NOT COVERED UNDER WARRANTY.

H. If further information is desired, contact a servicing dealer. For the location of servicing dealers in your area call 1-877-356-3698.

LIMITED WARRANTY FOR NEW SCOTTS BRAND PRODUCTS

Manufactured by John Deere

(Canada Only)

A. GENERAL PROVISIONS - The warranties described below are provided by John Deere Limited ("John Deere") to the original purchasers of new Scotts Brand Products Manufactured by John Deere. Under these warranties, John Deere will repair or replace, at its option, any part covered under these warranties which is found to be defective in material or workmanship during the applicable warranty term. Warranty service must be performed by a dealer or service center authorized by John Deere to service the type of product involved, which will use only new or remanufactured parts or components furnished by John Deere. Warranty service will be performed without charge to the purchaser for parts or labor. The purchaser will be responsible, however, for any service call and/or transportation of product to and from the dealer's or service center's place of business, except where prohibited by law, for any premium charged for overtime labor requested by the purchaser and for any service and/or maintenance not directly related to any defect covered under the warranties below.

B. WHAT IS WARRANTED - Subject to paragraph C below, all parts of any new Scotts Brand Product Manufactured by John Deere, except batteries, are warranted for the number of months or days specified below. Warranty statements required by law covering engine emission-related parts and components, if any, are found in the Operator's Manual delivered with the product.

EQUIPMENT USE	WARRANTY TERM
1) IN RESIDENTIAL (Private Homeowner) APPLICATION	24 Months
2) IN ANY OTHER APPLICATION	90 Days

Each warranty term begins on the date of product sale to the purchaser.

C. WHAT IS NOT WARRANTED - JOHN DEERE IS NOT RESPONSIBLE FOR THE FOLLOWING: (1) Used products; (2) Any product that has been altered or modified in ways not approved by John Deere; (3) Depreciation or damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, lack of proper protection during storage or accident; (4) Normal maintenance parts and service

D. SECURING WARRANTY SERVICE - To secure warranty service, the purchaser must (1) report the product defect to an authorized dealer and request repair or replacement within the applicable warranty term, (2) present evidence of the warranty start date, and (3) make the product

WARRANTY

available to the dealer or service center within a reasonable period of time.

E. LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES - SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE - TO THE EXTENT PERMITTED BY LAW, NEITHER JOHN DEERE NOR ANY COMPANY AFFILIATED WITH IT MAKES ANY WARRANTIES, REPRESENTATIONS, CONDITIONS OR PROMISES RESPECTING THE SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE AND COVERED BY THIS WARRANTY OTHER THAN THOSE LISTED ABOVE. THIS EXCLUSION INCLUDES FUNDAMENTAL TERMS, REPRESENTATIONS, CONDITIONS AND WARRANTIES WHICH MAY BE EXPRESSED OR IMPLIED, VERBAL OR OTHERWISE, INCLUDING IMPLIED OR STATUTORY CONDITIONS OR WARRANTIES OF MERCHANTABILITY AND FITNESS, WHETHER PURSUANT TO THE SALE OF GOODS ACT OR ANY OTHER STATUTE OF ANY PROVINCE OR OTHERWISE, EXCEPT WHERE SUCH IMPLIED OR STATUTORY CONDITIONS OR WARRANTIES MAY NOT BE EXCLUDED BY LAW.

F. REMEDIES EXCLUSIVE - THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON THE SCOTTS BRAND PRODUCTS MANUFACTURED BY JOHN DEERE ARE THOSE SET FORTH IN THIS WARRANTY EXCEPT FOR THOSE REMEDIES PROVIDED BY LAW WHICH MAY NOT BE EXCLUDED. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR INJURIES OR BE LIABLE FOR DAMAGES SUFFERED BY THE PURCHASER AS A RESULT OF FUNDAMENTAL BREACHES OF CONTRACT OR BREACHES OF FUNDAMENTAL TERMS. The limitations of liability contained in this warranty shall only be effective to the extent permitted by law. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

G. NO DEALER WARRANTY - EXCEPT FOR WARRANTIES WHICH MAY NOT BE EXCLUDED BY LAW, THE SELLING DEALER MAKES NO WARRANTY OF ITS OWN AND THE SELLING DEALER HAS NO AUTHORITY TO MAKE ANY REPRESENTATION OR PROMISE ON BEHALF OF JOHN DEERE, OR TO MODIFY THE TERMS OR LIMITATIONS OF THIS WARRANTY IN ANY WAY.

H. FAILURE DUE TO IMPROPER SET-UP IS NOT COVERED UNDER WARRANTY.

I. If further information is desired, contact a servicing dealer. For the location of servicing dealers in your area call 1-877-356-3698.

Tire Warranty

John Deere warranty applies for tires available through the John Deere parts system. For tires not available through the John Deere parts system, the tire manufacturer's warranty applicable to your machine may not apply outside the U.S. (See your John Deere dealer for specific information.)

John Deere, Federal and California Emission Control System Warranty (Small Off-Road Gas Engines)

Your Warranty Rights and Obligations

The United States Environmental Protection Agency (EPA), the California Air Resources Board (CARB) and John Deere are pleased to explain the emission control system warranty on your 1995 or later small off-road equipment engine. In California, 1995 and later small off-road equipment engines must be designed, built and equipped to meet the State's stringent anti-smog standards. In other states, 1997 and later model year equipment engines must be designed, built and equipped to meet the U.S.

EPA regulations for small non-road, spark ignition engines. John Deere must warrant the emission control system on your small off-road equipment engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your small off-road equipment engine.

Your emission control system may include parts such as the carburetor, fuel-injection system and ignition system. Also included may be connectors and other emission related assemblies.

Where a warrantable condition exists, John Deere will repair your small off-road equipment engine at no cost to you including diagnosis, parts and labor.

John Deere Emission Control System Warranty Coverage

In California, 1995 and later small off-road equipment engines are warranted relative to emission control parts for two years. In other states, 1997 and later model year equipment engines are warranted relative to emission control parts for two years. If any emission related part on your engine is defective, the part will be repaired or replaced by John Deere.

Owner's Warranty Responsibilities

As the small off-road equipment engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. John Deere recommends that you retain all receipts covering maintenance on your small off-road equipment engine, but John Deere cannot deny warranty solely for lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road equipment engine owner, you should however be aware that John Deere may deny you warranty coverage if your small off-road equipment engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small off-road equipment engine to an authorized John Deere Commercial and Consumer Equipment Retailer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact your John Deere Commercial and Consumer Equipment Retailer, or the John Deere Customer Communications Center at 1-800-537-8233.

Length Of Warranty Coverage

John Deere warrants to the initial owner and each subsequent purchaser that the small off-road equipment engine is:

- Designed, built and equipped so as to conform with all applicable regulations adopted by the California Air Resources Board (CARB) for 1995 and later equipment engines, and all applicable regulations of the United States Environmental Protection Agency (EPA) for 1997 and later equipment engines; and
- Free from defects in materials and workmanship which can cause the failure of an emission warranted part for a period of two years after the engine is delivered to the initial retail purchaser. John Deere is liable for damages to other engine components caused by the failure of a warranted part during the warranty period. If any emission related part on your engine is defective, the part will be repaired or replaced by John Deere.

Warranted Parts

Coverage under this warranty extends only to the parts listed below (the emission control system parts) to the extent these parts were present on the engine purchased.

Fuel Metering System:

- Carburetor and internal parts (or fuel injection system).
- Air/fuel ratio feedback and control system.
- Cold start enrichment system.

WARRANTY

Air Induction System:

- Air Cleaner
- Intake manifold.

Ignition System:

- Spark plugs.
- Magneto or electronic ignition system.
- Spark advance/retard system.

Catalyst System:

- Exhaust manifold.

Miscellaneous Items Used in Above Systems

- Vacuum and temperature switches.
- Electronic controls.
- Hoses, belts, connectors and assemblies.

Since emission related parts may vary slightly from model to model, certain models may not contain all of these parts and certain models may contain functionally equivalent parts.

Warranty Service And Charges

Warranty service shall be provided during customary business hours at any authorized John Deere Commercial and Consumer Equipment Retailer located within the United States of America. Repair or replacement of any warranted part will be performed at no charge to the owner, including diagnostic labor which leads to the determination that a warranted part is defective, if the diagnostic work is performed at an authorized John Deere Commercial and Consumer Equipment Retailer. Any parts replaced under this warranty shall become the property of John Deere.

Maintenance Warranty Coverage

- a) Any warranted part that is not scheduled for replacement as required maintenance must be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty must be warranted for the remaining warranty period.
- b) Any warranted part that is scheduled only for regular inspection to the effect of "repair or replace as necessary" must be warranted as to defects for the warranty period. Any such part repaired or replaced under the warranty must be warranted for the remaining warranty period.
- c) Any warranted part which is scheduled for replacement as required maintenance must be warranted as to defects only for the period of time up to the first scheduled replacement for that part. Any such part repaired or replaced under the warranty must be warranted for the remainder of the period prior to the first scheduled replacement point for that part.
- d) Normal maintenance, replacement or repair of emission control devices and systems, which are being done at the customers expense, may be performed by any repair establishment or individual; however, warranty repairs must be performed by an authorized John Deere Commercial and Consumer Equipment Retailer.

e) Any replacement part that is equivalent in performance and durability may be used in the performance of any non-warranty maintenance or repairs, and shall not reduce the warranty obligations of John Deere.

Consequential Warranty Coverage

Warranty coverage shall extend to the failure of any engine components caused by the failure of any warranted part still under warranty.

Limitations

This Emission Control System Warranty shall NOT cover any of the following:

a) Repair or replacement required as a result of (i) misuse or neglect, (ii) improper maintenance or unapproved modifications, (iii) repairs improperly performed or replacements improperly installed, (iv) use of replacement parts or accessories not conforming to John Deere specifications which adversely affect performance and/or durability, (v) alterations or modifications not recommended or approved in writing by John Deere.

b) Replacement parts, other services and adjustments necessary for normal maintenance.

c) Transportation to and from the John Deere Commercial and Consumer Equipment Retailer, or service calls made by the Retailer.

Limited Liability

a) The liability of John Deere under this Emission Control System Warranty is limited solely to the remedying of defects in materials or workmanship. This warranty does not cover inconvenience or loss of use of the small off-road equipment engine or transportation of the engine to or from the John Deere Commercial And Consumer Equipment Retailer. JOHN DEERE SHALL NOT BE LIABLE FOR ANY OTHER EXPENSE, LOSS, OR DAMAGE, WHETHER DIRECT, INCIDENTAL, CONSEQUENTIAL (EXCEPT AS LISTED ABOVE UNDER "COVERAGE") OR EXEMPLARY ARISING IN CONNECTION WITH THE SALE OR USE OF OR INABILITY TO USE THE SMALL OFF-ROAD EQUIPMENT ENGINE FOR ANY OTHER PURPOSE.

b) NO EXPRESS EMISSION CONTROL SYSTEM WARRANTY IS GIVEN BY JOHN DEERE WITH RESPECT TO THE ENGINE EXCEPT AS SPECIFICALLY SET FORTH IN THIS DOCUMENT. ANY EMISSION CONTROL SYSTEM WARRANTY IMPLIED BY LAW, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE EMISSION CONTROL SYSTEM WARRANTY TERMS SET FORTH IN THIS DOCUMENT.

c) No dealer is authorized to modify this Federal, California and John Deere Emission Control System Warranty.

Limited Battery Warranty

NOTE: Applicable in North America only.

TO SECURE WARRANTY SERVICE

The purchaser must request warranty service from a John Deere dealer authorized to sell John Deere batteries, and present the battery to the dealer with the top cover plate codes intact.

FREE REPLACEMENT

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship within 90 days of purchase will be replaced free of charge. Installation costs will be covered by warranty if (1) the unserviceable battery was installed by a John Deere factory or dealer, (2) failure occurs within 90 days of purchase, and (3) the replacement battery is installed by a John Deere dealer.

PRO RATA ADJUSTMENT

Any new battery which becomes unserviceable (not merely discharged) due to defects in material or workmanship more than 90 days after purchase, but before the expiration of the applicable adjustment period, will be replaced upon payment of the battery's current list price less a pro rata credit for unused months of service. The applicable adjustment period is determined from the Warranty Code printed at the top of the battery and chart below. Installation costs are not covered by warranty after 90 days from the date of purchase.

THIS WARRANTY DOES NOT COVER

WARRANTY

- A. Breakage of the container, cover, or terminals.
- B. Depreciation or damage caused by lack of reasonable and necessary maintenance or by improper maintenance.
- C. Transportation, mailing, or service call charges for warranty service.

LIMITATION OF IMPLIED WARRANTIES AND PURCHASER'S REMEDIES

To the extent permitted by law, neither John Deere nor any company affiliated with it makes any warranties, representations, or promises as to the quality, performance or freedom from defect of the products covered by this warranty. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO THE EXTENT APPLICABLE, SHALL BE LIMITED IN DURATION TO THE APPLICABLE ADJUSTMENT PERIOD SET FORTH HERE. THE PURCHASER'S ONLY REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON JOHN DEERE BATTERIES ARE THOSE SET FORTH HERE. IN NO EVENT WILL THE DEALER, JOHN DEERE OR ANY COMPANY AFFILIATED WITH JOHN DEERE BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. (Note: Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages. So these limitations and exclusions may not apply to you.) This warranty gives you specific legal rights, and you may also have some rights which vary from state to state.

NO DEALER WARRANTY

The selling dealer makes no warranty of its own and the dealer has no authority to make any representation or promise on behalf of John Deere, or to modify the terms or limitations of this warranty in any way.

PRO RATA MONTHS OF ADJUSTMENT

NOTE: If your battery is not labeled with a warranty code, it is a warranty code "B".

Warranty Code	Warranty Period
A	40 Months
B	36 Months
C	24 Months

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QUALITY STATEMENT

Please do not return this tractor to the store where you purchased it.

Your Scotts tractor, designed and built by John Deere, is more than just a purchase, it's an investment in quality. That quality goes beyond our equipment to your dealer's parts and service support.

That's why John Deere has initiated a process to handle your questions or problems, should they arise. If you have questions or problems with your new tractor, please follow the steps below. To locate your nearest authorized Scotts servicing dealer, please call toll free 1-877-864-2295.



Step 1

Refer to your operator's manual

- A. It has many illustrations and detailed information on the safe and proper operation of your equipment.
- B. It gives troubleshooting procedures, and specification information.
- C. It gives ordering information for parts catalogs, service and technical manuals.
- D. If your questions are not answered in the operator's manual, then go to Step 2.

Step 2

Contact your dealer

- A. Your authorized Scotts servicing dealer has the responsibility, authority, and ability to answer questions, resolve problems, and fulfill your parts and service needs.
- B. First, discuss your questions or problems with your dealer's trained parts and service staff.
- C. If the parts and service people are unable to resolve your problem, see the dealership manager or owner.
- D. If your questions or problems are not resolved by the dealer, then go to Step 3.

Step 3

Call the Customer Communications Center

- A. Your authorized Scotts servicing dealer is the most efficient source in addressing any concern, but if you are not able to resolve your problem after checking your operator's manual and contacting your dealer, call the Customer Communications Center.
- B. For prompt, effective service, please have the following ready before you call:
 - The name of the dealer with whom you've been working.
 - Your equipment model number.
 - Number of hours on machine (if applicable).
 - Your 13-digit serial number which you recorded on the inside front cover of this manual.
 - If the problem is with an attachment, your attachment identification number.
- C. Then call 1-877-864-2295 and our advisor will work with your dealer to investigate your concern.